THE RIGGER'S GUIDE,

AND

SEAMAN'S ASSISTANT,

CONTAINING PRACTICAL INSTRUCTIONS

FOR COMPLETELY

RIGGING SHIPS OF WAR.

By CHARLES BUSHELL,

OF H.M. DOCK-YARD, PORTSMOUTH.

SECOND EDITION,

WITH SIXTEEN ADDITIONAL PAGES ON WIRE RIGGING.

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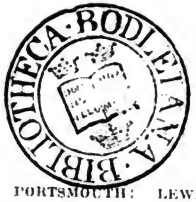

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Testimonials.

H. M. S. Driver, Jan., 13, 1855.

Sir,

In answer to your note accompanying the two Copies of the Rigger's Guide, I beg to say that I think it an *Excellent Practical Work very useful to the Service*, and that I shall recommend it wherever such a book is wanted.

I am, yours obediently,

EDW. B. RICE, Comdr.

To Mr. Charles Bushell,
Victoria Terrace, Portsea.

Royal William, December 1, 1854.

Sir,

I have received two Copies of your Rigger's Guide, and shall have great pleasure in recommending it, and hope you may be rewarded for your useful labour. I consider *every youngster who wishes to be a Sailor, should possess your little book*, containing such information of Rigging, &c. I enclose a Post Office Order for 12s. With best wishes for your success,

I remain yours truly,

JOSEPH KINGCOME.

To Mr. Charles Bushell,
Victoria Terrace, Portsea.

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I am yours . . .

E. . .

To Mr. Charles Budnell,
Victoria Terrace, Ply . .

Roy

SIR,

I have rece . . Guide, and shall hav . . it, and hope you m . . labour. I consider . . *a Sailor, should* . . information of . . .

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Dedication.

TO SIR THOMAS BYAM MARTIN,

ADMIRAL OF THE FLEET.

Sir,

I most thankfully accept your kind permission to Dedicate the following work to you, feeling that from your well known zeal for Her Majesty's Service, and strict impartiality, you will give it the patronage and support it may deserve.

I am well content to let the work rest on its own merits, and should it meet with approval, I shall be satisfied in having done somewhat for the Service.

I have the honor to be,

Sir,

Your most obedient humble servant,

CHARLES BUSHELL,

Of H. M. Dockyard, Portsmouth.

PREFACE.

THE sending forth a work on that part of Seamanship—Rigging Ships of War of the first Naval Nation—is, I am well convinced, even to the most experienced Seaman, a serious undertaking. But, having given the subject my whole attention for many years, measuring all my work, and proving it by the tables herein laid down, I can with confidence launch the work into the Naval World, to be fully applied and tested.

To the higher officers of the service, who may condescend to read it, I can confidently recommend it for correctness, and hope it will prove of some service to them in overlooking the application.

To the younger and working classes, it is more particularly addressed, and I hope may prove of benefit in passing their examination.

As I had an opportunity of ascertaining the length and circumference of the mast and yards of the *St. Vincent*, I, at the same time measured the breadth of beam, &c.—being obliged to take one ship as a guide; but the directions I have given will do for any class of Ships, whether steam or sailing.

At the end of the work, I have given the cut of a Brig's rigging, in order to show that the same directions will apply to any class of ships.

CHARLES BUSHELL,
Of H. M. Dockyard, Portsmouth.

INDEX.

RIGGER'S GUIDE.

BOWSPRIT.

To commence with the Bobstay Collars, of which there are three, Inner, Middle, and Outer.

BOBSTAY COLLAR, INNER.

	Fthm.	Ft.	Inch.
Cut the Inner Collar - - . -	3	1	1½

Any two collars cut in one length, splice an eye at each end, length of eye, 11 lays from strand, the marlinspike is entered to whipping fid, driven in as far as required before the eye is formed; after which there are 9 clear lays from fid to first strand.

Strands of splice to be put in once and a half, set up and wormed with 14 yarn spun yarn, backed with 4 yarn ditto; to fill lays of the rope, parcel with canvass, and well tarred, served with 6 yarn spun yarn, 10 feet from eye at each end, then cut it at the required length, which will be from back of eye - -	2	4	0½

	Fthm.	Ft.	Inch.
Length when both eyes are spliced and served, from eye to eye would be -	2	0	9½
In bending the second eye, add to length -	0	0	2
From centre of eye to strand, first entered	0	1	0
Sufficient end to splice with - - -	0	2	1
Length taken for the first eye - -	0	3	1
Extreme length of stretched Rope for Inner Collar. - - - - - -	3	1	1½

BOBSTAY INNER COLLAR.

To prove the Length.

The round of the Bowsprit where this collar would be lashed - - -	1	3	0
14-Inch heart, the round of it - -	0	2	10

Ten-Inch Rope.

Allow two thirds the round of rope for taking up and going round the heart -	0	0	6½
Add half that the seizing takes up - -	0	0	5
Length before the heart is seized in, from the back of one eye, to the back of the other - - - - - - -	2	0	9½

Seize the Heart in Collar.

The heart is seized at the centre of the collar with 2½-inch rope, in length -	5	3	0

There are 6 and 5 turns, and 3 crossing turns.

Length of collar when fitted from the heart to the back of the eyes, 4-ft. 8½-in. × 2	1	3	5

What the collar takes up in lashing round the Bowsprit, allows sufficient drift for ditto.

Length to cut this Collar from unstretched Rope.

If the two eyes were spliced in the Collar before the rope was stretched the length to cut it would be - - - -	3	0	4

	Fthm.	Ft.	Inch.
Allow for round of Bowsprit, and round of heart - - - - -	1	5	10
Bending up the two eyes - - -	0	0	4
Put a mark for the back of the eyes, at 12-ft. 2-in. and when the Collar is set up and stretched - - - -	0	1	0
Half the two eyes and for splicing - -	1	0	2
BOBSTAY COLLARS.	3	1	4

Particulars of the Inner Collar being stated, it only remains to give the length of the Middle & Outer Collars.

Middle Collar, Length from eye to eye -	2	0	5½
Outer Collar, Length from eye to eye -	2	0	1½

BOBSTAYS.

Inner.

To ascertain the length from the drawings, measure from the upper hole in the cutwater, to the under part of Bowsprit, at two-thirds out from the knight head, it will be 21-ft. × 2= - - -	7	0	0

Middle.

From the centre hole in the Cutwater to 3 feet further out on Bowsprit, will be 25-ft. × 2= - - - - -	8	2	0

Outer.

From the lower hole in the Cutwater to 3 feet further out on the Bowsprit, will be 30-ft. × 2= - - - -	10	0	0

Setting up, Stretching, and Parcelling.

If there be sufficient length, set up in one piece, and stretch 6 inches to the fathom, and worm it from end to end with 14 yarn spunyarn, and back it with 5 yarn spunyarn, parcel each bobstay separately, commencing from the centre, and parcel towards the ends, leaving 8 feet between each not parcelled or served.

Serving.

By putting the parcelling on that way the water cannot penetrate between the edges, as one edge overlays the other; give the parcelling a good coat of tar, and serve it with 6 yarn spunyarn, commencing from the centre and serve towards the ends.

Sinneting.

Instead of leathering Bobstays put on Sinnet made of three part of 4 yarn spunyarn plaited up, and hove on over the service with a serving mallet, the same as in serving with spun yarn; length to serve the Bobstay with sinnet, from the centre each way, No. 1, 3-ft. 9-in. No. 2, 4-ft. 6-in. No. 3, 5-ft. 3-in.

BOWSPRIT SHROUD COLLARS, SEVEN-INCH ROPE.

These Collars, of which there are four in number, are cut two in one, with an eye spliced at each end.

Length for the eyes.

Dimensions for the eyes are 11 lays, from the lay you enter the marlinspike, to the wippen or the first strand to be entered, and when the eye is bent up, there will be 9 clear lays; the strands of the splice are put in once whole strand, and once half strand; it is then set up and stretched 6 inches to the fathom; the strands of the splice are then tapered and marled down, after its being wormed with 12 yarned spunyarn, it is parcelled, tarred, and served with 6 yarn spunyarn, 9-ft. each way.

NO. ONE, STARBOARD COLLAR.	Fthm.	Ft.	Inch.
Length to cut this Collar would be -	2	4	6
Half the eye would require - - -	0	0	9
Bending up the eye - - - - -	0	0	1½
Length of this Collar when both eyes are spliced and served, would be - -	0	11	9
For splicing the second eye would require	0	1	6
For half the first eye and splicing - -	0	2	4½
Whole length of Collar - - - - -	2	4	6

	Fthm.	Ft.	Inch
To Seize the Collar round the Heart.			
The Heart is seized in the Collar at the thirds, giving the long leg the advantage of four inches; the round of the Bowsprit where this Collar would be lashed -	1	3	0
The round of the heart - - . -	0	2	4
Rope takes up two-thirds of its circumference, going round the heart would be -	0	0	5
Long leg from the heart to the back of the eye - - - - - -	1	0	4
Short Leg.			
Short Leg from the heart to the back of the eye would be - - - -	0	2	8
Length of Collar from the back of one eye to the back of the other when straight -	1	5	9
Seizing.			
The Heart is seized in with 1½-in. rope, length - - - - - -	4	0	0

There would be 7 and 6 turns, and 3 crossing turns.

Unstretched Rope.

If both eyes are to be spliced in this collar, before the rope is stretched, 1 foot must be deducted for stretching.

NO. TWO, PORT COLLAR.

This Collar is of the same dimensions as No. 1 Collar - - - - -	1	5	9

NO. THREE, STARBOARD COLLAR.

	Fthm.	Ft.	Inch.
The round of the Bowsprit where this Collar would be lashed - - -	1	2	8
Long leg from the Heart to the back of the eye - - - - - - -	1	0	0
Short Leg - - - - - - -	0	2	8
And two-thirds the round of rope it took up going round the heart - -	0	0	5
Round of the heart - - - -	0	2	4
Length of Collar from the back of one eye, to the back of the other, when straight - - - - - - -	1	5	5

NO. FOUR, PORT COLLAR.

This Collar is of the same dimensions as the collar, No. 3. - - - - -	1	5	5

What the Collars take up going round the Bowsprit, and the seizing would give sufficient drift, or length or distance for lashing.

BOWSPRIT SHROUDS

If Chain, to be 13-16=8-inch rope, with a Slip at one end to Shackle to an eye bolt, at the Bows, and a heart Iron Strapped at the other end, to set up to the collar on the Bowsprit with 3½-inch lanyard, 4 fathoms long, there are four in number, two on each side.

Dimensions for the length, make a piece of spunyarn fast to the eye bolt in the Bows, and haul taut to the heart or the thimble of the Collar, (whichever it may be) cut the spunyarn at the bolt and at the collar, deduct 1-ft. 6-in. from it for the drift, for setting up, and the remainder will be the length of the shroud.

If rope shrouds, 3-ft. 6-in. must be allowed for drift. The Collars are usually fitted with hearts, but some

	Fthm.	Ft.	Inch.
Officers prefer Thimbles, with chain shrouds, and if thimbles, the collar would be 1 foot less on the straight,			
for the thimble measures - - -	0	1	4
and the heart measures - - -	0	2	4

All Chain is neat and answers well for the above purposes, but in case of carrying away a spar, the wreck is very difficult to clear, and frequently attended with danger to ship and men, it is therefore highly desirable to discontinue Chain.

FORE STAY COLLARS, THE LONG COLLARS INNER.

7½-inch Rope.

The Rope for these collars is set up, stretched, and wormed with 8 yarn spunyarn, parcelled, tarred, and served with 6 yarn spunyarn.

Length of rope for this collar will be -	6	4	0
Length to marry the splice would be -	6	1	7

(The word "Marry" is where the two parts of the rope come together for splicing.)

The strands of the splice are put in once, whole strand; once, half strand; and once, quarter strand, each way, so that the splice lies neatly round the heart. Set the strap up to stretch the splice and serve it all over.

18-In Heart, Securing the collar round the Heart.

The heart for this collar should have two scores, one larger than the other, for the splice to lie in, the splice is nipt in the centre of the score with a strand, and hove taut with a bolt. The heart is lashed to some place convenient, a strand rove through the bight, and brought round a bolt, and hove taught with another.

If on board, put a Tackle on, and haul the two parts straight till the rope is close to the heart.

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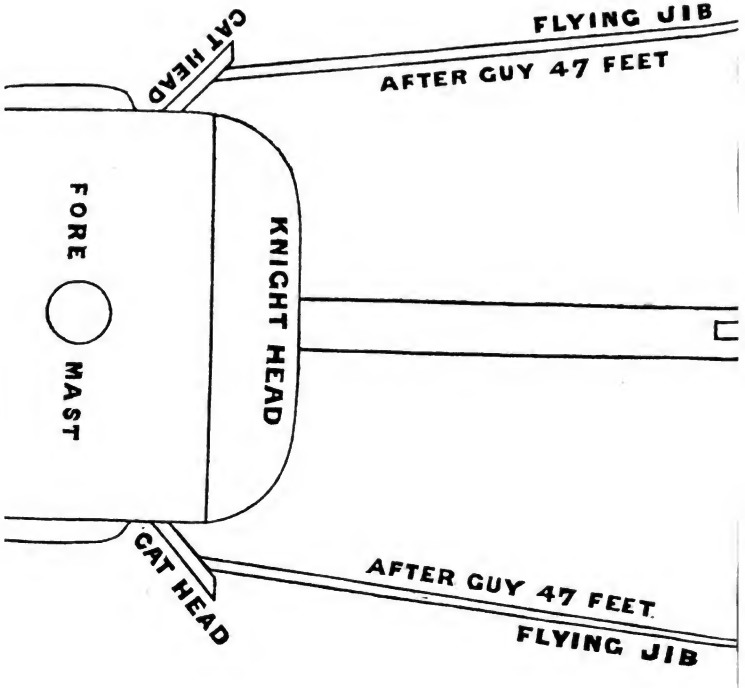

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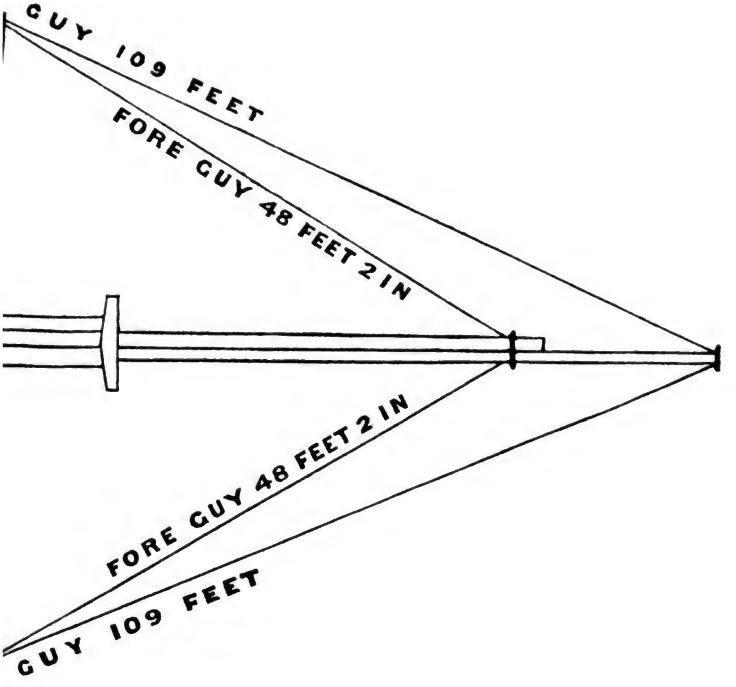


Bringing the 2nd Bight round the Heart

Put a good stop on the two parts close to the heart, mark the centre of the bight with chalk, mark b c. at the centre of the heart; take the strand of the first part, pass it round both parts, and nipper it as before; bend the two bights down, and heave taut till the last part is as close round the heart, as the first part; put a stop on the last two parts, the same as on the first.

It is then set up with a Luff Tackle till the rope is close round the heart.

Seizing the Collar round the Heart.

There is a score each side of the heart 3 inches wide for the seizing to lay into, number of turns there is 7 lower turns and 6 riding turns, and it is crossed in three places, first above the strap, second between the two parts of the strap, and underneath the strap.

	Fthm.	Ft.	Inch.
Size and length of each seizing 1½-inch	6	3	0
To prove the length of the Collar when fitted.			
The length of this collar fitted from the heart to the outer edge of bight would be 7-ft. 4-in. × 4 = - - - -	4	5	4
The round of the heart 3-ft. 8 in. × 2	1	1	4
The rope will take up, going twice round the heart, and the two bights once and a half the round of the rope, 7½-in. × 1½-inch - - - - : -	0	0	11¼
Length of each end to splice with, from the marrying mark, 1-ft. 3-in. × 2	0	2	6
The length to cut this collar would be -	6	4	1¼
Dimensions for the length of the Collars.			
The round of Bowsprit where this collar would be lashed is 8-ft. 10-in. and two-thirds would be × 5-ft. 10-in. 8-ft. 10-in. = 14-ft. 8-in. that would give the length of the two bights from the heart - - - - - . -	2	2	8

OUTER FORE STAY COLLAR.

	Fthm.	Ft.	Inch.
This Collar is fitted the same as the inner one, only it is 6-inches shorter, length to cut this one - - - - -	6	2	0
Length when fitted from the heart to the outer edge of bights - - - -	1	0	10
Some Officers frequently prefer the Bail Sling Collars, the dimensions for which are as follows, viz.—First the round of the Bowsprit, 8-ft. 10-in. × 2 -	2	5	8
16-Inch Heart.			
The round of the heart - - -	0	3	4
10-Inch Rope.			
The rope takes up in going round the heart and the bight, once round the rope, 10-inches - - - -	0	0	10
The length of this Collar will be - -	3	3	10
This Collar is fitted with a long splice, length of each end to splice with would be 5-feet × 2 = - - - - -	1	4	0
It would be set up and wormed with 14 yarn spunyarn, and backed with 4 yarn spunyarn, then parcelled, tarred, and served with six yarn spunyarn, about 20-feet			
The length to cut this collar would be -	5	1	10
To prove the Length.			
Length, when fitted, from the heart to the back of the eye, 8-feet 10-in. × 2	2	5	8
Round of the heart - - - -	0	3	4
The Rope takes up going round the heart, and the bight once the round of the rope - - - - - -	0	0	10
Length of the two ends to splice with -	0	10	0
Length required - - - -	5	1	10

The splice should be on one side of the Collar.

Seizing.

A flat seizing of 1½-inch, 3½-fathoms (would be the best for this collar) so that the lashing may lay better over it, what this collar takes up in going round the Bowsprit would give sufficient drift for lashing.

NO. TWO, OUTER COLLAR.

Fitted the same way as the Inner.

Note.—This collar is not so long as No. 1 Inner Collar by 8 inches, and 4 inches when fitted, the Bowsprit being 4 inches less in circumference.

COLLARS WARPED WITH TWO-INCH ROPE.

Some Officers prefer these collars. the dimensions for which are as follows: 1st, take a Cask, 8-ft. 4-in. in circumference at the centre part, and a spar to lash athwart it; the round of spar, one end 2-ft. 3½-in, the other 2-ft. 1-in.

	Fthm.	Ft.	Inch.
Pass a line round the Cask, and over to the centre part of the Toggle, on both sides the length would be - - -	1	4	0

Pass plenty of spunyarn stops round as well as up and down the Cask, and along at each end of the toggle, to stop all parts together when passed.

The Toggle must be set off from the Cask by wedges to get the length required.

Length of Rope required for this collar would be 96 fathoms, of 2 inch. Let it be well stretched, splice a long eye round one end of the Toggle; commence passing the turns round the Cask, and round the other end of the toggle, and back round the cask, and so continue till all the turns are passed.

No. of turns round the Toggle, and No. of riding lays.

No. of lays and turns round the Toggle, viz.-1st lay, 7 turns, 2nd lay, 7 turns, 3rd lay, 6 turns, 4th lay, 6 turns. 5th lay, 5 turns.

No. of lays round the cask, and No. of turns in each lay: the 1st lay, 9 turns, 2nd lay, 9 turns, 3rd lay, 8 turns, 4th lay, 7 turns, 5th lay, 6 turns, 6th lay, 6 turns, 7th lay, 5 turns.

To secure the last end, splice a long eye round the opposite end of the toggle, where the first eye was spliced.

Tie the stops round all parts to keep them together.

Slack up the Wedges, and marl the Collar all over with 4 yarn spunyarn, give it a good coat of tar, parcel it with canvass, tar it, and serve it with 4 yarn spunyarn; it is not served as any other rope, for every turn is hove on singly with a seizing mallet.

Seizing the Heart.

The heart is seized in one of the eyes round the Toggle, and the other eye serves for lashing when round the Bowsprit.

	Fthm.	Ft.	Inch.
The heart is seized in with 1½-in. rope, length - - - - - - -	3	3	0
Being a flat seizing there are no riding turns.			
From the heart to inside of the eye -	1	2	6
The heart takes up - - - - -	0	1	6
Length when fitted - -	1	4	0

JIB-BOOM.

Dimensions for the length of Foot ropes, 4½-inch 12 fathoms, 6 inch.

The two are in one piece of rope, an eye formed in the bight to go over the Jib-boom.

	Fthm.	Ft.	Inch.
Length for the eye - - - -	0	3	5
From the hounds of Jib-boom to the eye bolt in the Cap, 32-ft. 0 in. × 2 = -	10	4	0
Allow for the droop under the Boom, 1-ft. 4-in. × 2 = - - - -	0	2	8
Length required for the 2 eyes & splicing	0	2	6
Total - -	12	0	7

There are about 10 Turk's heads formed round each, to prevent the men's feet from slipping.

Scale for the Spritsail Guys before the Bowsprit is steeped, the length &c. given, (see drawing, p.p. 8, 9.)

The length of Spars.

First Bowsprit, from the Knight-head to the outer edge of the Cap - -	8	3	0
Second Jib-boom, from hound to heel -	8	1	0
Third Spritsail Gaff, from jaws to hound	4	0	6

The Jaws of the Gaff when placed to the Bowsprit would be 11 feet from the outer edge of Cap, and 5-ft. 4-inches from the heel of Jib-boom.

8-inch Rope.

The length of the Fore Guys when fitted, from the fork of the eye that goes over the Jib-boom, to the fork of the eye that goes over the Spritsail Gaff will be -	8	0	0

That is one foot less than the Jib-boom is, from hounds to heel.

Eye of Jib-boom.

Length for the eye, once round the Jib-boom	0	3	0
Once the round of rope - - -	0	0	8
Sufficient end to splice with - - -	0	1	6

Eye of Spritsail Gaff.

	Fthm.	Ft	Inch
Length for the eye of Spritsail Gaff once round	0	1	8
Once the round of rope	0	0	8
Sufficient end to splice with	0	1	6
Length when fitted from fork to fork	8	0	0
Length of stretched rope to draw for	9	3	0

One Guy, the Port Guy, must be two inches longer for going outside of the Starboard Guy.

SPRITSAIL GUYS.

The Guys should be made from well stretched rope, sheer falls of one and $\frac{1}{8}$ worm is the best.

If the Guys are made from new rope, enter the marlinspike at 44-ft. 6-in. from one splice	7	2	6
To the other, for it will stretch 3-ft. 6-in.	0	3	6
3-ft. 6-in. + 44-ft. 6-in. = 48-ft. 6-in. when fitted	8	0	0

AFTER GUYS.

8-inch Rope, breadth of beam from knight heads to cat do. 20-ft. 6-in.

Dimensions for the lengths, viz. 1st, the Cat head is 6-ft. 6-in. abaft the Knight head	1	0	6
From knight head to Jaws of Gaff, 40-ft.	6	4	0
Distance from hounds of Spritsail Gaff to the eye bolt in the Cat head would be	7	4	6
Deduct for setting up with a lanyard, 3-ft. 6-in. 46-ft. 6-in. = 43-ft. length when fitted from the fork of the eye to the back of the thimble, if well stretched rope, would be	7	1	0

Lengths of Rope required for Guys and thimble.

	Fthm.	Ft.	Inch.
Eye for the Gaff, once round - -	0	1	8
Once the round of rope - - -	0	0	8
And sufficient end to splice with - -	0	1	6
From the lower part of thimble to the whipping	0	0	11
And sufficient end to splice with - -	0	1	6
The length required for one guy - -	8	1	3

The neatest way for the after guys and martingale is as follows, viz.–7-in. Rope, the after Guy, and Jumper, to be one piece of rope, with a short piece spliced in, to form the eye, to go over the Spritsail Gaff.

SPRITSAIL MARTINGALE, OR JUMPER.

Dimensions for the length of drift, setting up, and allow sufficient for turning the thimbles in.

From the Spritsail Gaff to the Iron-bound Clump Block in the stem is - -	6	4	0
From Clump Block to Knight-head -	2	2	0
Dimensions for the eye - - - -	0	1	8
Once the round of the rope - - -	0	0	7½
Length of one - -	9	2	3½

MARTINGALE STAY.

Dimensions for cutting out the length and fitting the same by the drawings.

The Bowsprit steeps 5½-inches in every foot in length.

Length in dimensions of Spars.

1st, from Knight head to outer edge of cap	8	3	0
2nd, length of Jib-boom from Hounds to Heel - - - - - - -	8	1	0
3rd, it houses one third from outer edge to cap - - - - - -	5	2	8
4th, length of Martingale from Jaws to Hounds - - - - - -	3	2	0

Draw the Bowsprit and Jib-boom the length and steep required, and the Martingale under the Bowsprit close to the Cap.

	Fthm.	Ft.	Inch.
From the hounds of the Jib-boom, to the hounds of the Martingale, allowing it to incline forward, is - - - -	7	2	0
If stretched Rope, eye for Jib-boom.			
The length from the fork of one eye to the fork of the other - - -	7	2	0
The round of the Jib-boom - - -	0	3	0
Once the round of rope - - -	0	0	8
End to splice with - - - -	0	1	6
Eye for the Martingale.			
Once the round of Martingale - -	0	1	8
Once the round of rope - - -	0	0	8
End to splice with - - - -	0	1	6
Length of Rope required -	8	5	0

Splice the eye.

If stretched rope, enter the marlinspike at 4-ft. 11-in. from the end, and 44 feet from that enter the spike for the other eye.

If new rope, 41 feet will do for it, as it will stretch - - - - -	0	3	0

Put the strands in once and a half, and worm the eye with $1\frac{1}{4}$-inch, before it is set up.

Length of Worming.

Set the stay up and worm it all through with $1\frac{1}{4}$-inch; the length of each worming is one and a half, the length of the rope required to be wormed is 44-ft. + 22-ft. = 66-ft. × 3 = 198-feet. - -	33	0	0

Marl the strands down and serve over it; length of service is 1-ft. 6-in. from the fork of the eye.

BACK ROPES, OR MARTINGALE GUYS.

Length.

	Fthm.	Ft.	Inch.
From the Martingale to the Cat head will be 58-ft. × 2=116-ft. length for both sides - - - - - - -	19	2	0

Drift for setting up would allow sufficient for the eye and splicing the Thimble in.

Splice a short piece in the centre to form the eye, to go over the martingale, and a thimble in each end to set up to the Cat head with a lanyard.

FLYING JIB BOOM.

Dimensions for the guys, 4-in rope, length from Flying Jib Boom end, to the hole in the Spritsail Gaff is 62-feet - -	10	2	0
And from ditto to Cat head 47-feet, the two Guys are cut - - - -	7	5	0
In one, length for one Guy - - -	18	1	0

Splice a short piece in the centre, to form an eye to go over the Flying Jib-boom.

Length for both Guys - - - -	36	2	0

FLYING JIB STAY.

Dimensions for the length, viz.-from the Top Gallant mast head to the Flying Jib-boom end would be 147 feet, and from ditto to knight head, 98-ft. + 147 ft. =245-feet, length required will be -	40	5	0

Mark the strands down and serve over it; length of service is 1-ft. 6-in. from the fork of the eye.

BACK ROPES, OR MARTINGALE GUYS.

Length.

	Fthm.	Ft.	Inch.
From the Martingale to the Cat head will be 58-ft. × 2=116-ft. length for both sides - - - - - - -	19	2	0

Drift for setting up would allow sufficient for the eye and splicing the Thimble in.

Splice a short piece in the centre to form the eye, to go over the martingale, and a thimble in each end to set up to the Cat head with a lanyard.

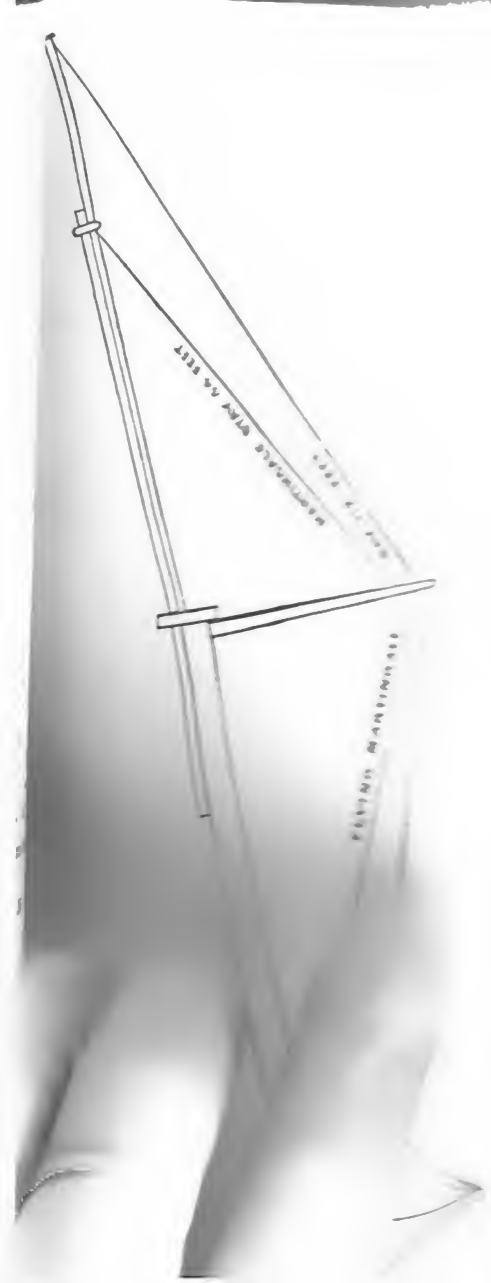
FLYING JIB BOOM.

Dimensions for the guys, 4-in rope, length from Flying Jib Boom end, to the hole in the Spritsail Gaff is 62-feet - -	10	2	0
And from ditto to Cat head 47-feet the two Guys are cut - - -	7	3	0
	18	5	0

In one, length for cut from - - -

Splice a short piece in the centre to form the eye, to go over the [illegible]

Length for [illegible]



FLYING MARTINGALE STAY.

4½-inch Rope.

	Fthm.	Ft.	Inch.
Dimensions for the length, viz.-from the Flying Jib-boom, to the sheave hole in the martingale - - - - - -	10	0	0
From ditto to knight head - - - -	8	4	0

Splice an eye in one end to go over the Flying Boom. If this rope is new from store, 9 feet less would be sufficient, if sufficiently stretched when fitted.

FOOT ROPES, THREE-AND-A-HALF-INCH ROPE.

Dimensions for the length: from the Boom end to the Jub Guys, where the eye is seized, 18-feet × 2. - - - - -	6	0	0
Eye seized in the bight to go over the Flying Boom end - - - - -	0	2	0
Allow for the droop below the Boom, 1-ft. for each side - - - - - -	0	2	0
An eye spliced at each end takes 2 feet -	0	2	0
There are 6 overhand knots made on each to prevent the men's feet from slipping, allow for this 6-ft. + 42-ft. length of both	8	0	0

FORE SHROUDS, ELEVEN-INCH ROPE.

Scale for cutting the Shrouds.

Length of Mast from upper deck to lower side of Trisiletrees - - - -	9	1	0
Depth of Tristletrees and Bolster - -	0	2	8
Fore part of Channels below deck - -	0	0	8
Depth of Channels - - - -	0	0	6
	9	4	10

Draw a perpendicular line for the mast, 58-ft. 10-in. and an horizontal line 24-ft. for the half breadth of beam, that is, from the after part of the mast hole, to the outer edge of channels, abreast of the Foremast dead eye.

	Fthm.	Ft.	Inch.
The breadth of beam give for carrying the shroud out to the channels - -	0	4	4
The distance from the upper part of Bolster to the lower edge of channels would be 10fm. 3ft. 2in. × 2 - -	21	0	6
Place the Warpins distant apart - -	10	3	3
			2
Length of No. 1 pair of Shrouds - -	21	0	6
Do. „ 2 ditto - -	21	2	6
Do. „ 3 ditto - -	21	4	6
Do. „ 4 ditto - -	22	0	6
Do. „ 5 ditto - -	22	2	6
Do. „ 6 ditto - -	22	4	6
Do. „ 7 ditto - -	23	0	6
Do. „ 8 ditto - -	23	2	6
No 9 is fitted as two single shrouds -	23	4	6
Allow for half the eyes and splicing -	3	0	0
Length of Rope required - - -	204	4	6
If the Rigging were to be cut out and fitted on board the ship, allow half the round of the mast head, in addition to the angle, that is to say, one-fourth of 9-ft. 6-in. on the two parts, would be 2-ft. $4\frac{1}{2}$ + 63-ft. 3-in. = 65-ft. $7\frac{1}{2}$-in. -	10	5	$7\frac{1}{2}$

Place the Sampson Posts on the main deck at 10-fm. 5-ft. 9-in· apart, and warp the shrouds round the posts the same as round the Pins in the rigging house.

Angle Line is 30-fm. of $\frac{3}{4}$-in. well stretched, with an overhand knot, 2-ft. from the end.

The Mast supposed to be steeped.

To measure for the Rigging with the Angle Line. Send a man to the mast head, by the Starboard Girtline in a Bowline knot, only sufficient for a man to sit in, for if the bowline knot is too long, the man is liable to fall out of it.

	Fthm.	Ft.	Inch.
Put the knot of the angle line close to the centre of the mast, above the bolster, haul it taut down to the outer lower edge of the channels, abreast of the fore-mast dead eye, there mark the line with a yarn put through the strand, measure the line, and it will prove to be - -	10	3	2
If the Rigging is to be fitted on board the ship, allow one-fourth the round of the mast head in addition to the angle, which will be 2-ft. 4½-in. + 63-ft. 3-in. =65-ft. 7½-in. - - - - -	10	5	7½

Warping the Rigging round the Pins.

Make one end of the Hawser fast to the lower pin with a piece of 14 yarn spunyarn, haul it taut, and take the bight round the upper pin, and haul it taut below the lower pin. Let the men be some distance from the pins, when they haul it taut, set three men at each pin to stand on the hawser to keep it down on the floor, close to the other part, and from rendering back, it is passed round the pins. Every shroud follows its own part round the pins flat on the floor; this allows for the rise at the mast head, and the spread in the channels.

There are eight pairs of Shrouds, and two single ones, they are called Swifters.

When the ninth part is warped round the pins, make a chalk mark on the hawser, at the centre of the lower pin, haul the hawser straight, and measure three fathoms from the chalk mark and then cut it; that will allow sufficient rope, with what it will stretch for the two eyes, put the end of it abreast the centre of the lower pin, round back on the bight, and centre it above the upper pin; put a spunyarn stop on the centre of the bight, that is where it would be cut after it is served for the two eyes.

Dimensions for the length of service for the eye part, one third the length of the mast, from Deck to lower side of trestle trees, that is 18 feet.

Draw a chalk line straight athwart the shrouds, 18 feet from the upper pin, except the foremast leg of No. 1 and 2 pair, for they are served all the way down.

When the shrouds are cut, put two or three turns of yarn round the rope where it is chalked.

Draw a chalk line at the centre of the shrouds, at the back of the upper pin, that is where they would be marked according to their respective numbers, chalk the shrouds at the lower pin the same way, that is where they would be cut.

Cut the bights at the lower pin, put the axe underneath the rope, and beat it down with a commander, that cuts it off clean, whip all the ends; No. 9 pair, round turns only.

To mark the Shrouds.

Mark all the rest of the shrouds with 2 yarn spunyarn, take a clove hitch round the chalk mark at the centre of the shrouds, and lay the two ends up, make as many knots as the shrouds are in number, the first knot to be 8 inches from the shroud, viz: for the 8th pair, 8 knots, for the 7th pair, 7 knots, for the 6th pair, 6 knots, for the 5th part, 5 knots, for the 4th pair, 4 knots, for the 3rd pair, 3 knots, for the 2nd pair, 2 knots, and for the 1st pair, 1 knot.

Fitting the Shrouds.

Make a bend at each end of the shroud, the same as for a clinch at the end of a rope, put a chalk mark at 4 ft. from the end, and a chalk mark 1 ft. 4 in. from the end. In forming the bend, these two marks are brought abreast of each other and seized, with 14 yarn spunyarn, over the chalk marks.

Toggle one end to a strap that is round a post, the other end toggles through a stramp of a four-fold block, and the fall brought to the windlass.

When the shroud is straight along the floor, chalk a mark on the floor, opposite the back of the bend, and then it will be seen what the shroud has stretched, without measuring it, and when it is stretched 6 inches to the fathom, put a chalk mark on the floor opposite the back of the bend.

The first shroud to be hove out is No. 1, and every shroud heaves out 2 feet longer than each other. Set them up by their following numbers, and mark the floor for every pair.

Worm Nos. 1 and 2 pair from the quarter mark on the after legs, to the end of the foremast legs, with 14 yarn spunyarn, and back it with 4 yarn spunyarn, that will fill up the lays of the rope.

Parcel the shrouds with strips of canvass, from the end towards the centre of the eye, and from the quarter mark towards the eye.

Why should it be parcelled towards the eye?

Because if it was parcelled from the eye towards the end, the wet might penetrate between the edges of the parcelling and have no way to escape, but if parcelled up, the wet cannot penetrate, as one part overlays the edge of the other.

Put the parcelling on with the lay of the rope, and near the centre of the eye put it on thicker, or else in bending up the shroud to form the eye, the service and parcelling will open, which will allow the wet to get in.

Give it a good coat of Tar.

Serve the shrouds with 6 yarn spunyarn, put it on against the lay of the rope.

The foremast leg of Nos. 1 and 2 is served all the way down, all the other shrouds are wormed, parcelled, and served, from quarter mark to quarter mark.

The ninth pair is for two single shrouds. Two feet from the centre stop, serve 12 feet for the eye each side; after it is served, cut it at the centre mark and splice the eyes; put the strands in once and a half.

After being spliced, lash the two eyes together, the bends being left in the ends; toggle them as before, set them up, marl the ends of the strands down and serve over the splice.

Forming the eyes in the Shroud.

To form the eyes in the shrouds, take one end of the shroud to the other, allow one end to be 6 inches longer than the other for the after leg break; down the bight pass three turns of a small rope, round the two parts of the shroud, four feet from the back of the eye; set two men on the floor, each side, with their feet against the shroud, and haul on the two ends of the rope; haul both sides equal, and keep the shroud square till the two parts meet.

Put a spunyarn stop on, to keep the two parts close while you prepare the seizing.

Dimensions for the length of the Eye.

That is from the inside part of the eye to the first turn of the seizing.

	Fthm.	Ft.	Inch.
Half round the mast-head is 4ft. 9in., and one third of one square is 9½in., + 4ft. 9in. = 5ft 6½in., which would be the length of the eye. - - - -	0	5	6½

Half the round of the mast and one third of one square, is the length of the eye of shroud for any mast in the service.

FORE SHROUDS SEIZING THE EYE.

Put a piece of tarred canvass round the two parts of the shroud under the seizing, length of seizing 5-fathom 1ft. of 1¼-in. rope. Splice an eye in one end, put the

strands in once, and not cut them off, well stretch it, pass the eye round the shroud, and reeve the end through it; round 7 turns round the shroud, and reeve the ends underneath the parts and through its own eye, leaving sufficient bight to heave on.

	Fthm.	Ft.	Inch.
The first turn of seizing would be -	0	5	6½

From the centre inside the eye, place it square round the shroud, two strands in the splice placed down the shroud, the turns of seizing to be over it. Make a yarn fast to the third stand and pass it round the shroud, above the seizing, to keep the eye in its place, or when you heave the first turn, it will render so far round. Heave the seizing on with a mallet, after the 7 turns are hove taut on, haul the slack through the eye. and heave it taut.

Take the yarn of the third strand, and lay the strand on the top of the lower turns and pass 6 riding turns over it; put the end between the 6th and 7th turns of the lower parts.

At present, the end of the seizing is pointing down, turn the shroud over and the end will point upwards, as it will be more convenient for heaving the cross turns; lay the bolt on the shroud to heave the turns taut.

Put a stop of spunyarn round the shroud, four inches above the seizing, and one four inches below, and drive the marlinspike down between the two parts of the shroud, close to the upper part of the seizing; relieve the spike by driving a wedge between it and the spike, the spike will become loose, take it out, drive it in below the seizing, and relieve it with another wedge; pass one crossing turn and heave it taut, pass the second turn, let the end come up underneath its own part, and heave it well taught; take a half hitch round the shroud and heave it taut, unlay the end and make a crown knot, cut the ends off, and tar the seizing.

Showing the length of Rope required.

	Fthm.	Ft.	Inch.
Once round the mast-head - - -	0	9	6
Two-thirds of one square, 1 ft. 7 in. + 9 ft. 6 in., = 11 ft. 1 in. - - -	0	1	7
Once round and a half of the shroud -	0	1	4½
Length of rope on the straight -	2	0	5½

SCALE FOR TURNING THE DEAD EYES IN THE FORE SHROUDS BEFORE THE MAST IS STEEPED.

Length of Foremast, from the Deck to the uppermost part of Bolster - -	9	3	8
Fore part of Channels below deck, 8 ft. + 57 ft. 8 in. — 58 ft. 4 in. - -	0	0	8
Draw a perpendicular line for the mast, that includes the channels below deck	9	4	4
Draw an horizontal line to the right of the mast 23 feet, for the breadth of beam, that would be from the mast to the outer edge of channels, abreast the foremast dead eye.			
The breadth of the beam gives 3 ft. 8 in. + 58 ft. 4. in. = 62 ft. - - -	0	3	8
Length of foremast shroud, from bolster to channel - - - - -	10	2	0

Draw another mast 62 ft, the length of the foremast shroud, with 3-8ths of an inch rake to every 6 feet, and an horizontal line for the channels, 31 feet, that would be from No. 1 dead eye to No. 11.

Draw every shroud separate from the upper part of bolster, to the channel abreast of their respective dead eyes, leaving Nos. 8 and 10 as spare dead eyes.

Length of foremast shroud from upper part of bolster to channels, abreast of No. 1 dead eye would be 62 ft.

When the shroud is over the mast head, the distance the seizing of the eye would be from the mast, 1 ft. 3 in. — 62 ft. = 60 ft. 9 in.

What one shroud rises above the other at the mast-head will be 3 inches.

In the drawings, the Channels are marked by a straight line, but the after part of the fore channels is 7 inches lower than the fore part, which will be seen in the following tables and drawings.

Drift for setting up the shroud will be 7 feet.

From channels to lower part of dead eye in the shroud 7 feet — 60-feet 9-in. = 53-ft. 9-in.

The lower dead eye is 1ft. 6in. above the channels, that will leave 5ft. 6in. between the dead eye in the shroud, and dead eye in the channel.

After the shrouds have been set up three times, there will be about 3-ft. drift between the dead eyes.

It will be found by the drawings, that by measuring 7 feet perpendicular from the channels up the foremast shroud, and drawing a straight line athwart all the shrouds, at 7 feet perpendicular from the channels on the after shroud, would measure 7ft. 10in. up the shroud, the same in proportion to every shroud for going aft, which will be shown in the tables.

What the Shroud takes up going round the dead eye.

The standing part takes up going round halfway the dead eye, once round the shroud, 11in. + 53ft. 9in. = 54ft. 8in.

Length from lower part of dead eye to the nip, that goes round the standing part of the shroud, viz. half the circumference of the dead eye, 2ft. 1½in. and once the round of shroud is 11ft. + 2ft. 1½in = 3ft. 0½in. + 54ft. 8in. = 57ft. 8½in.

That would be the length of the foremast shroud from seizing to the nip - -	Fthm.	Ft.	Inch.
	9	3	8½

SEIZING THE SHROUDS FOR THE DEAD EYES.

Pass the end of the shroud underneath the up and down part, as thus, for the starboard shrouds  the port shroud thus 

The ends of the shrouds will be inside and aft, both sides of the ship.

Nipper the two parts together, where the end is crossed with a strand and a bolt, so that the mark will be at the centre of the nip.

Bring the end round to its own part, and pass a strand round the two parts, put a bolt close to the up and down part, and pass the ends of the strand round the ends of the bolt, and heave the two parts to, the same as for the strap of a block; when the two parts are close to, put a spunyarn stop on, to keep the two parts together, and it also keeps the seizing from slipping down while heaving it on. The size and length of the seizing 2 in. + 5 fthms. 3 ft.

This seizing is called a throat seizing. The first turn is put on close to the stop and the turns passed up towards the standing part of the shroud, it is hove on and secured the same as the seizing of the eye, 7 and 6 turns, and the end not cut off. The short end left to pass round the shroud.

QUARTER SEIZING.

This is a flat seizing, for there are no riding turns; size and length, $1\frac{1}{2}$ inch, $3\frac{1}{2}$ feet.

This seizing would be 6 inches below the throat seizing.

The shroud being seized, place the dead eye in, and beat the eye down the shroud till it is close round the dead eye.

LANYARDS, SIX INCHES EIGHT FATHOMS EACH.

Make a Matthew Walker knot on one end, then reeve the lanyard in the after hole of the dead eye in the shroud; let the knot be inside.

After the shrouds have been set up two or three times, take the standing part to the eye bolt in channels and splice it in.

FORE STAY INNER.

	Fthm.	Ft.	Inch.
Dimensions for the length, viz :—			
From the after part of masthead to the bowsprit, where the inner collar would be lashed on - - - - -	12	5	0
It would take to make the two Flemish eyes, 8 ft. 4 in. + 77 ft. = 85 ft. 4 in.	1	2	4
End to splice the half collar would be 2 ft. 6 in + 85 ft. 4 in. - - - - -	0	2	6
Length of collar when fitted, 19 ft. + 87 ft. 10 in. = 106 ft. 10 in. - -	3	1	0
	17	4	10
This stay would stretch 8 ft. — 106 ft. 10 in. = 98 ft. 10 in.			
Length of rope required for this stay would be - - - - -	16	2	10

TO FIT THE STAY.

Make a Flemish eye in each end of the stay, the dimensions for the eye; the round of the toggle the eye is made on is twice the round of the stay.

The End.

Length of end taken for the eye : three times the round of the stay, allowing the left hand figure to be feet, and the right inches, 3 ft. × 14 = 42 - -	0	4	2

The width of the eye would be one third the round of the stay.

At 4 ft. 2 in. from the end, put a good stop on, unlay the ends and take the turns well out of the strand; separate the heart in two.

The Toggle.

One end of the toggle is lashed to a handspike, and 12 pieces of spunyarn laid on the upper part of the toggle, and stopped at each end with a yarn.

Bring the stay up underneath the toggle, pass the heart over and half knot it on the top; pass one end under the part to be heaved and with a bolt each side of the toggle, heave the half knot till the stay is close up; hold on the bolt on one side, and come up the other, haul through the slack of the end that was tucked twice, and heave it taut.

Take about 30 yarns out of each strand and twist them up, half knot them over the toggle each side of the heart, heave them taut and pass them down the lays of the rope, for wormings, and put a seizing of three yarn spunyarn over it, close the toggle and another 9-inch below it, put a yarn round the ends to keep them in the lays.

Take 20 yarns each time from each side, haul them taut up from the bosom, and half knot them on the top, haul them taut, and continue passing the yarns till they are all expended,

Be careful to haul the yarns taut up from the bosom, or they will not bear an equal strain.

Smooth the yarns well down, and put a stop round all, close underneath the toggle.

Half knot the stops that are on the toggle, heave them all taut with a mallet, each side of the eye, form the other half knot, and heave it taut.

Marl the eye with 3 yarn spunyarn, the hitches to be one inch apart, commencing at the centre of the

eye, and work both ways; cut the stops as you come to them, marl the eye within three inches of the bosom, place the yarns, pass a strand round all, close under the toggle, and heave it taut with bolts; pass six turns, heave every turn well taut.

Take the strand off all but two turns, put a flat seizing of 3 yarn spunyarn on, leave the two strands on; after the eye is finished, beat the strands down with a mallet, as it is marled down.

Finish marling the eye when the hitches come near the bosom, pass the turns round the same, as if serving a rope, till the turns are close up in the bosom, finish by passing the end under its own part.

The marling of the eye might be finished before the seizing is put on, and the seizing passed over it; one way is as good as the other.

Beat down the strand and marl one foot from the seizing, put another seizing on, beat the strand down, and finish the marling; take the strand off, the toggle is left in the eye.

TO SET THE STAY UP AND SERVE IT.

Put the two bights of a pair of slings over the toggle at each end, one toggle to a strap round a post, the other to a strap of a purchase block.

TO STRETCH THE FORE STAY AND SERVE IT.

Bring the fall to the windlass, and heave the stay out six inches to the fathom.

Worm 19 feet at each end, from the back of the eye, with 14 yarn spunyarn, and back it with 6 yarn spunyarn. Parcel it with canvas and tar it, put the parcelling on towards the eye, and serve it with 6 yarn spunyarn.

Lower the stay down, cut 3 fthms. 3 ft. 6 in. off from one end to splice to the other end, to form the collar. Take the toggles out of the eyes, lay the half

collar on the top of the other part, lash the two eyes together to keep them square, and put two stops on the other parts to keep them together.

TO SPLICE THE HALF COLLAR.

Put the strands of the splice in once and a half. Put a toggle through both eyes, and make a bend at the end of the stay, and toggle it to the purchase; stretch the splice, taper the strands and marl them down, worm, parcel, and serve, 10 feet down the stay from the fork.

Lower the stay down and cavil up the crutch, finish the Flemish eyes, by serving them with 4 yarn spun-yarn, round the eye twice; each turn is hove on with a mallet, leaving sufficient room between the turns on the outside, for one turn to go between each in going round the second time; the inside turn will ride a little when finished.

Fid the eyes out and stop them together.

	Fthm.	Ft.	Inch.
Dimensions for the length of the stay, when fitted from the eyes to the nip that goes round the standing part of stay, for the heart, the length of heart is	0	1	6
The heart in the collar projects -	0	2	0
Above the bowsprit, from ditto to after part of mast-head, leaving sufficient drift to lash the eyes - - -	12	3	0

Allow 5 ft. drift, for setting up, 5 ft. — 75 ft. = 70 ft. The standing part for going round the heart will take up 6 in. + 70 ft. = 70 ft. 6 in.

From the lower part of the heart to the nip, will take half the round of the heart, 1 ft. 10 in., and once round the stay, 1 ft. 2 in. + 1 ft. 10 in. = 3 ft. + 70 ft. 6 in. = 73 ft. 6 in.

	Fthm.	Ft.	Inch.
Length of stay from the eyes to the nip would be - - - - - -	12	1	6

leaving 3 ft. 6 in. at end.

In Cutter Stay Fashion.

The heart is turned in the same way as the dead eyes in the fore rigging.

The outer or starboard stay the same as the starboard shroud.

The port or inner stay the same as the port shroud.

The upper stay is two feet longer than the inner stay.

Seize the heart in with 2-inch; length it will take for each stay - - - -	6	4	6

There should be 9 and 8 turns, and two cross turns.

If the stay is made with the ropemaker's eye, it will be served the same as a Flemish eye.

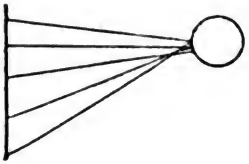
FORE TOPMAST FUTTOCK SHROUDS.

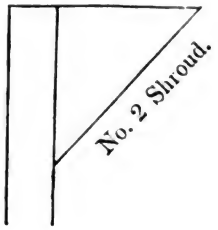
Dimensions for the length of each:

Take the length of the after Fore crosstree from the trestletree will be - - -	1	3	1
This would be the length for the necklace round the mast, from the lower side of trestletrees.			
The depth of trestletrees, 1ft 8in + 9ft. 1in. =10ft. 9in. would be the dimensions from the upper part of trestletree to the necklace	0	1	8
	1	4	9
Draw a mast with the necklace from the upperpart of trestletrees - -	1	4	9
And an horizontal line from the width of half the top - - - - - -	1	3	1
With a pair of compasses measure for the necklace, to the plate hole in the top rim, for No. 2 futtock shroud, because that shroud will be abreast the centre of the mast, the length will be - -	2	2	4

Draw the circumference of the mast, and the top rim, the length of the second shroud from the mast.

The futtock plate hole is 2 feet from each other; measure for each shroud separately.





The length of each shroud from the upper part of plate hole on top, to the necklace will be, No. 1, 14ft.6in. No. 2, 14ft. 4in., No. 3, 14ft 6in., No. 4. 14ft. 10in., and No. 5, 15ft. 6in.

	Fthm.	Ft.	Inch.
Deduct the length of futtock plate - -	0	1	3
And the drift for setting up, 1ft. 0in. + 1ft. 3in. = 2ft. 3in. — 14ft. 6in. - - = 12ft. 3in. which will be the length of No. 1 shroud when fitted, from the bosom of the hook to the back of the lashing eye - - - - - -	0	1	0
	2	0	3

Dimensions of the length of rope required: for No. 1 shroud, 12ft. 3in., the length of hook, 9in., 12ft. 3in. = 11-ft 6in., it will take 2ft. 3in. for going half round the thimble, and to splice with, and half the lashing eye, and to splice it will take 2ft. 3in. + 2ft. 3in. = 4ft. 6in. + 11ft. 6in. = 16ft.

Length of rope required for No. 1 futtock shroud - - - - - - -	2	4	0

The following Table will show the length of the starboard shrouds.

	No. 1		No. 2		No. 3		No. 4		No. 5	
	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.
From top rim to necklass.....	14	6	14	4	14	6	14	10	15	6
Length of Futtock plate .....—	1	3	1	3	1	3	1	3	1	3
	13	3	13	1	13	3	13	7	14	3
Drift for setting up	1	0	1	0	1	0	1	0	1	0
Extreme length when fitted ...	12	3	12	1	12	3	12	7	13	3
Length of Hook	0	9	0	9	0	9	0	9	0	9
	11	6	11	4	11	6	11	10	12	6
Length for the thimble and the eye, and to s] lice with	4	6	4	6	4	6	4	6	4	6
Length required for each shroud	16	0	4	6	16	0	16	4	17	0

Fthm. Ft. Inch.

Length of rope required for one side, will be 81-ft. 2in. × 2=162ft. 4in.

Length of rope required for both sides - 27 0 4

TO FIT THE FUTTOCK SHROUDS.

Enter the fid the distance required from the end for splicing the hook in.

Reeve the end through the eye of the hook from the back towards the point, then put a good whipping round the rope, as far as you want to unlay the rope for splicing.

Put the strands in once and a half. they are set up with a purchase, and stretched 6 inches to the fathom, the strands tapered down, and served over with spun-yarn, 1ft. 6in. from the thimble; the foremast leg is served all over.

The shrouds are cut two in one length, and a hook spliced at each end, and when the ship is to be rigged, they are cut in two, and the lashing eyes spliced.

Length of the lashing eye would be 11 clear lays from the lay the marlinspike must be entered, to the first strand entered from the wippen.

When the eye is bent up, it will only show nine clear lays, put the strands in once and a half, it is then set up, marled down, and served over, 1ft. 6in. from the eye.

FORE TOPMAST SHROUDS.

The following table shews the lengths to cut them out.

The length of topmast, from hounds to heel, would be the length of the foremast shroud.

	Fthm.	Ft.	Inch.
Topmast, from hounds to heel, 9 fm. 3 in. × 2=18 fm. 6 in. - - - -	18	0	6
Place the warping pins distant apart, 9 fm. 3 in. × by 2, the length of No. 1 pair – - - - - -	18	0	6
Ditto of No. 2 pair - - - -	18	1	9
Ditto „ 3 ditto - - - -	18	3	0
Ditto „ 4 ditto - - - -	18	4	3
Ditto „ 5 ditto, for two single shrouds	18	5	6
Allow for half the eye and splicing -	1	1	0
	93	4	0

WARPING THE SHROUDS.

They are warped round the pins, the same as the fore shrouds.

The length required for service at the eyes is 1-5th the length of the topmast, from hounds to heel - - - - 1 4 10

At 10 ft. 10 in. from the pin, draw a chalk line straight athwart the shrouds (that is where the service would come to) except the foremast legs of Nos. 1 and 2 pairs, for they are served all the way down; put a yarn on the chalk marks, cut the bights at the lower pin, and whip them; mark the eyes with 2 yarn spun-yarn the same as for the fore shrouds.

Channels.

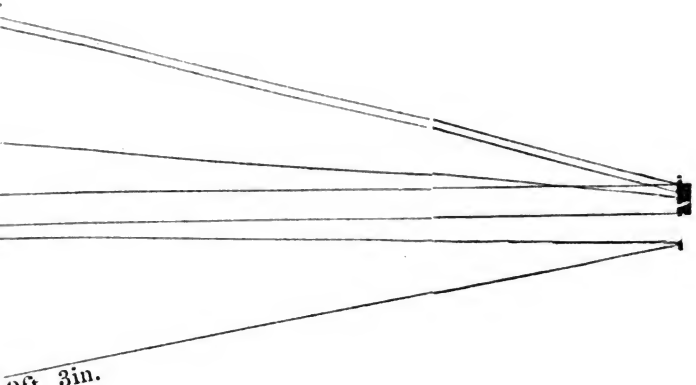
Foremast Leg of the After Backstay, 19fm. 4ft. 7in.

After Leg, 19fm. 4ft.

Breast Backstay, 19fm. 0ft. 3i

Breadth of Beam.

Breast Backstay,



Set the shrouds up and heave out 6 inches to the fathom, worm with 8 yarn spunyarn, fit them the same as the fore shrouds

The length of the eye will be half round the mast head and one third of one square.

The round of masthead, 5 ft. 1 in ÷ 2, = 2ft. 6½in. and 1-3rd of one square 5 in. + 2, 6½ = 2 ft. 11½ in.

	Fthm.	Ft.	Inch
From the inside of the eye to the first turn of a seizing will be - - -	0	2	11½

Sister Block.

There will be a 24 inch sister block, seized in the first and second pair of shrouds.

The distance the upper part of the block would be below the seizing of the eye, is once and a half the length of the block, taking the left hand figure for feet, and the right for inches.

Once and a half the round of block is -	0	3	6
Allow 2 in. more for No. 2 pair, for the rise at the mast head - - -	0	3	8

7½-in. rope, Cutter stay fashion,

Dimensions for turning the ead eyes in before they are put over the masthead, viz:

The length of topmast, from the hounds to the lower part of fid-hole, will be -	8	3	10
And the depth of crosstree and bolster -	0	1	7½
Draw a perpendicular line for the mast at	8	5	5½
And an horizontal line for the breadth of half top - - - - - -	1	3	6

By taking the shroud out to the top rim, it will give 1 ft. 3 in. + 53 ft. 5½ in. = 54 ft. 8½ in.

If the shroud be over the masthead, the seizing of the eye will be from the masthead, 1ft. — 54ft. 8½in = 53ft. 8½in. 0 1 0

Allow two inches for every following pair for the rise at the mast head.

11-inch dead eye.

The standing part takes up, going half round the dead eye, 6in. + 53ft. 8½in. = 54ft. 2½in.

The length taken from the lower part of dead eye to nip, is half the round of dead eye will be - - - - 0 1 4½

And once, round the shroud, 7½in + 1ft. 4½in. = 2ft. × 54ft. 2½in. = 56ft. 2½in. - 0 0 7½

Allow 5 feet drift from the top rim to the lower part of dead eye in shroud, 5 ft. — 56 ft. 2½ in = 51 ft. 2½ in. This shroud being served all the way down, it will not stretch like the other shrouds, therefore allow 6 inches more than the other; 6 in. + 51 ft. 2½ in. = 51 ft. 8½ in.

Length of the starboard foremast shroud, from the seizing of the eye to the nip that goes round the standing part of the shroud, for the eye . - - - 8 3 8½

Table for turning dead eyes in Topmast Shrouds.

	No. 1		No. 2		No. 3		No. 4		No. 5	
Angle from upper part of bolster to the top rim	ft. 54	in. 8½	ft. 54	in. 7½	ft. 54	in 8	ft. 54	in. 8½	ft. 54	in. 10
Distance the seizing from the mast ..... —	1	0	1	0	1	0	1	0	1	0
	53	8½	53	7½	53	8	53	8½	53	10
For rise at masthead ..... +					0	4	0	4	0	8
For standing part ..... +	0	6	0	6	0	6	0	6	0	6
For going ½ round dead eyes +	2	0	2	0	2	0	2	0	2	0
	56	2½	56	1½	56	6	56	6½	57	0
Drift from top rim..... —	5	0	5	0	5	0	5	0	5	0
	51	2½	51	1½	51	6	51	6½	52	0
Foremast shroud being served +	0	6								
Length of starboard shrouds from seizing to nip	51	8½	51	1½	51	6	51	6½	52	0
What the port shroud rises above the starboard ..... add	0	2	0	2	0	2	0	2	0	2
Length of port shrouds	51	10½	51	3½	51	8	51	8½	52	2

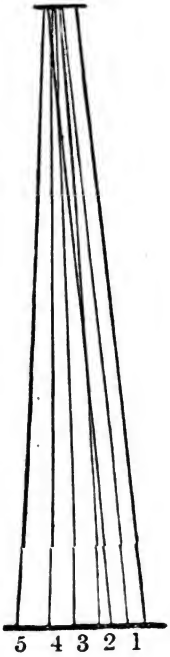
Drawings, shewing each shroud abreast of their respective dead eyes in top rim.

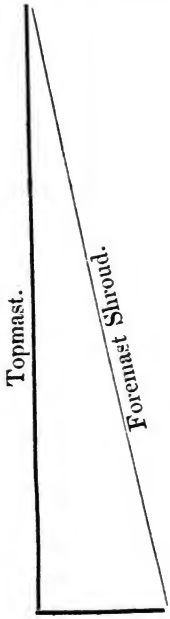
Draw a perpendicular line for the topmast, and an horizontal line for width of top from mast, that will give the length of the foremast shroud.

Draw the topmast the length of the foremast shroud, with 3-8ths of an inch rake to every 6 feet.

Draw an horizontal line to the left of the mast, for the length of top, or from the foremast dead eye to the after one, which would be 8 feet.

This is worked by 1-16th of an inch to the foot.





FORE TOPMAST BACKSTAYS.

	Fthm.	Ft.	Inch.
Dimensions of their length to be cut:			
Take the length of the foremast from the deck to lower side of trestletrees, that will give - - - - - - - -	9	1	0
And the topmast from hounds to heel, 54ft. 3in. + 55ft. = 109ft. 2in. - -	9	0	3
The channels below deck, 1ft. + 109ft. 2in. = 110ft. 2in. - - - - -	0	1	0
Depth of crosstrees and bolster 1ft. 7½in + 110ft. 2in. = 111ft. 9½in. - - -	0	1	7½
Place the warping at distance apart -	18	3	10½
Multiply by 2 - - - - - -			2
Length to cut No. 1 breast backstay -	37	1	9
Ditto No. 2 after backstay -	37	3	2
Ditto No. 3 ditto - -	37	4	7
Length of rope required - - -	112	3	6
If the breast backstsy is fitted with a cut splice.			
If the breast backstays are to be fitted with single eyes, they must be the last pair warped round the pins, and 6 feet allowed in addition to the warp, and the warping pins must be placed distance apart - - - - - - -	18	4	7
Multiply by 2 - - - - - -			2
Length of No. 1 after backstay - -	37	3	2
Ditto No. 2 ditto - -	37	4	7
For two single breast back stays - -	38	0	0
	1	0	0
Length of rope required - - -	114	1	9

What the rope stretches, will allow sufficient for the eyes, and the spread to the channels.

Warp them round the pins the same way as the shrouds.

The length of service for the eye part, will be one foot more than the shrouds.

Draw a line straight athwart the back stays, at 11ft. 10in. from the pin: mark them with a yarn after they are cut, whip the ends, and mark the eyes. The breast back stay, put three turns with a yarn at the centre of the pin, and mark the after back stays, No. 1 & No. 2.

TO FIT THEM.

Set them up and stretch them 6 inches to the fathom and worm the part for the eye, and top rim, with 8 yarn spunyarn, parcell it with canvass, tar it, and serve it with 7 yarn spunyarn.

The length for service in the wake of top rim and fore yard, is 3 feet less than the topmost is from the hounds to heel.

That would be from the seizing of the eye to the commencing of the service, and serve down 18 feet.

Breast backstays, one on each side. Instead of cutting the backstay to make a cut splice, serve 3 feet at the centre of the eye, and splice a piece of served rope in to form the other half eye, put the strands in once and a half, and serve 10 feet down from the splice.

After backstays, heave the eyes to, and seize them, the same as the shrouds with 1½in.—4½fathoms:

FORE TOP MAST BACKSTAYS.

Scale for turning the dead eyes in butter stay fashion, before the mast is steeped.

	Fthm.	Ft.	Inch.
Take the length of foremast from deck to trestletrees - - - - -	9	1	0
And topmast from hounds to heel - -	9	0	2

	Fthm.	Ft.	Inch.
54ft. 2in. + 55ft. = 109ft. 2in. topmast crosstrees and bolster - - -	0	1	7½
The channels below deck 1ft. + 110ft. 9½in. = 111ft. 9½in. - - - - - -	0	1	0
	18	3	9½
Draw a perpendicular line for the mast, and a horizontal line for the breadth of beam from the mast to channels, would be 23ft. 2in. the breadth of beam gives for the breast backstay, 2ft 6in, + 111ft. 9½in. = 114ft. 3½in. - - - - -	0	2	6
The length of breast backstay from the seizing of the eye to channels, would be	19	0	3½

Draw a mast to the left of the other, the length of the breast backstay, with ⅜ of an inch rate to every 6 ft. Draw an horizontal line for the length of channels, that would be from the foremast dead eye to the aftermast backstay dead eyes - - - - - 5 3 0

The breast backstay would set up 10ft abaft the foremast dead eyes.

The foremast leg of the after backstay sets up 22ft. abaft the breast backstay, that gives 4ft. more for going aft, 4ft + 114ft. 3½in. = 118ft. 3½in.

The aft leg for going 1 foot further aft, gives 3in. + 118ft. 3½in. = 118ft. 6½in.

Channels lower at the after backstays, 4in. + 118ft. 6½in. = 118ft. 10½in.

Length of the starboard after backstay, from seizing of the eye to channels, will be - - - - - - 19 4 10½

Dimensions of the length of rope it takes for the dead eyes: viz. the standing part takes up for going half round the dead eye, 6in. × 118ft. 10½in. = 119ft. 4½ in.

	Fthm.	Ft.	Inch.
From the lower part of dead eye to the nip taken half round of dead would be	0	1	6

And once the round of rope, 8½in. + 1ft. 6in. = 2ft. 2½in. + 119ft. 4½in. = 121ft. 7in.

Allow 2½in. for rise at the mast head, 2½in. + 121ft. 7in. = 121ft. 9½in.

Allow 7ft. 6in. drift from the lower part of dead eyes to the channel, for setting up, 7ft. 6in. — 121ft. 9½in. = 114ft. 3½in., and 2½in. for rising above the port one, 2½in. + 114ft. 3½in. = 114ft. 6in.

Length of the after starboard backstay, from the seizing of the eye to the nip that goes round the standing part of the Backstay, will be - - - -	19	0	3½

TABLE FOR TURNING DEAD EYES IN TOPMAST BACKSTAYS.

Commencing from the length of Mast, channels included, &c.

No. of each Backstay	No. 1.			No. 2.			No. 3.		
	fm.	ft.	in.	Fm.	Ft.	In.	Fm.	Ft.	In.
Length of Mast	18	3	9½	18	3	9½	18	3	9½
For the breadth of beam	0	2	6	1	0	6	1	0	9
Channel lowers going aft	0	0	0	0	0	4	0	0	4
For standing part	0	0	6	0	0	6	0	0	6
From lower part of dead eye to nip	0	0	0	0	2	2½	0	2	2½
Rise at masthead	0	0	0	0	0	5	0	0	5
	19	0	9	20	1	9	20	2	0
Drift for setting up	1	1	6	1	1	6	1	1	6
Length of starboard backstay, from seizing to nip	17	5	3	19	0	3	19	0	6
What port backstays rises above starboard	0	0	2½	0	0	2½	0	0	2½
Length of port backstays	17	5	5½	19	0	5½	19	0	8½

The breast backstay is from the seizing of the eye to lower part of block. There is an eye spliced 2 ft. long, and a 12-in. double block seized in.

The throat seizing would be 1½inch—4½fathoms.
The end ditto ¾inch—2½fathoms.

Allow 5 inches for the rise on the starboard after backstay, but that would be if the breast backstays should be fitted with two single eyes.

If fitted with a cut splice, allow 2½inch rise for the starboard after backstay.

FORE TOPMAST STAYS.

8½in. Stay.

Dimensions for the length of inner stay:—

	Fthm.	Ft.	Inch.
From the after part of topmast head, to the inner hole in the bees of the bowsprit will be 112ft. - - - - -	18	4	0
From ditto to knight head, 45ft.+112ft. =157ft. - - - - - - -	7	3	0
Length of the half collar, that is, once the round of mast head and four-fifths the round, 9ft. 1in.+157ft.—166ft. 2in. -	1	3	1
Length of rope for the inner stay - -	27	4	1
What the rope stretches will allow sufficient to make the Flemish eyes, and splice the half collars.			

OUTER STAY.

From the afterpart of topmast head to the outer hole in the bees of the bowsprit will require - - - - - -	18	5	0
From ditto to knight head, 48ft+113ft. =161ft. - - - - - - -	8	0	0
Length of half collar when fitted, 9ft. 2in. +161ft.=170ft. 1in. - - -	1	3	1
Length of rope required for the outer stay	28	2	1

The length it will take to make the Flemish eyes, is the same as for making the eyes, and they are made the same as the forestays.

These stays are set up, stretched, and fitted the same as the forestays.

After the half collar is spliced, serve 7 feet from the fork down.

It is wormed with 10 yarn spunyarn, and served with 6.

Put a mark on the inner at 150ft., and the outer 154ft. from the eyes, and as soon as they are rove through the bees of the bowsprit, turn the thimble in.

FORE TOP GALLANT SHROUDS.

4½-inch Rope, 2 pair

Dimensions for the length, &c.:—

	Fthm.	Ft.	Inch.
Take the length of the topgallant mast from hounds to heel - - - -	4	5	0
And topmast from hounds to heel, 54ft. 2in. +29ft.=83ft. 2in. - - -	9	0	2
Place the warping pin at - - -	13	5	2
Multiply it by 2 for one pair - -			2
Length of No. 1 pair of shrouds - -	27	4	4
Ditto No. 2 ditto - -	27	4	6
Length of rope required for both pair -	55	2	10

Mark them at the centre of the eye with a yarn, No. 1 and No. 2.

What the rope stretches will be sufficient for the eye, and for going through the crosstrees, and over the futtock bolt, or through a thimble in the necklace, that may be round the topmast.

	Fthm.	Ft.	Inch
Length of service for the eye part, is one-fifth the length of topgallant mast, from hounds to fid hole - - - -	0	5	6

Length for the service in wake of the crosstrees, and futtock bolt.

From the seizing of the eye, to the commencement of the service, will be -	4	1	0

That will be 3ft. less than the topgallant mast is, from hounds to fid hole, and serve 12 feet down.

Length for the eye: If seized in the centre to go over the topgallant funnel, the length it would take for the eye, would be once the round of the funnel, and once the round of the shroud.

A thimble, or an iron rolar seized in each pair of shrouds, close to the seizing of the eye, for the topgallant lifts, or a sister block is the best.

FORE TOP GALLANT BACKSTAYS.

Dimensions for the lengths, &c.—Take the length of the foremast, from deck to the lower side of trestletrees - -	9	1	0
And topmast from hounds to heel, 54ft. 2in. + 55ft. = 109ft. 2in. - - -	9	0	2
And top-gallant mast from hounds to heel 29ft + 109ft. 2in. = 138ft. 2in. - -	4	5	0
Place the warping pin - - - -	23	0	3
Multiply by 2 for one pair - - -			2
Length required for No. 1 pair - -	46	0	6
Ditto ditto No. 2 „ - -	46	1	0
Ditto ditto shifting backstay -	23	0	0
Length of rope required - - -	115	1	6

	Fthm.	Ft.	Inch.
What the rope stretches will allow for the eye and breadth of beam, and for going to the after part of channels, length of service for the eye part will be - -	0	5	9

That will be 3 inches more than the shrouds.

Seize the eye the same as the shrouds with $\frac{1}{4}$in. $2\frac{1}{4}$fm.

Shifting Backstay

Is fitted with an eye spliced at one end, to lash to the top-gallant mast-head, and a thimble spliced in the lower end to hook a tackle to.

For the service in wake of the fore yard :

Take the length of the top gallant-mast from hounds to heel - - - - -	4	5	0
And from topmast hounds to heel, 54ft. 2in. + 29ft. = 83ft 2in. - - -	9	0	2
From the seizing of the eye, to commencement of service - - - - -	13	5	2

and serve 14 feet down each leg.

Lengths required for turning in the thimbles in the lower ends before the mast is steeped.

Draw a perpendicular line for the length of the three masts - - - - -	23	0	2

That is foremast, topmast, and top-gallant masts.

And a horizontal line to the right of it, for the breadth of beam, will be 23ft.

The breadth of beam gives for the breast backstay, 1ft. 6in. + 138ft. 2in. = 139ft. 8in. - - - - - - - -	0	1	6
Draw another perpendicular line for the mast, the length of the breast backstay, would be - - - - - -	23	1	8

with $\frac{3}{8}$th of an inch rake to every 6 feet.

Draw an horizontal line to the left of the mast, for the length of channels, 23 feet.

	Fthm.	Ft.	Inch.
The foremast leg of the after backstay, for going 34ft. aft, gives 3ft. 3in. more than the breast backstay, 3ft. 3in. + 139ft. 8in. = 142ft. 11in. - - -	0	3	3
The after leg for going 1ft. further aft, gives	0	0	3
The channels lower aft, 8in. + 143ft. 2in. = 143ft. 10in. - - - - - -	0	0	8
Length of after backstay, from eye to channels - - - - - - -	23	5	10
Allow 8ft. drift from thimble in backstay to channels, for setting up with a lanyard 8ft. — 143ft. 10in. = 135ft. 10in. -	0	8	0
Length of the starboard after backstay, from the eye, to the lower part of thimble will be - - - - -	22	3	10

TABLE FOR TOP GALLANT BACKSTAYS.

For turning the thimbles in before they are put over the mast head.

	1st Shifting.			1st Aft.			2nd Aft.		
Commence with length of the three masts	Fm. 23	Ft. 0	In. 2	fm. 23	ft. 0	in. 2	Fm. 23	Ft. 0	In. 2
Breadth of beam	0	1	6	0	4	9	0	5	0
What the channels lower aft	0	0	0	0	0	7½	0	0	8
	23	1	8	23	5	6½	23	5	10
Drift for setting up —	1	2	0	1	2	0	1	2	0
Length of starboard backstay when turned in	21	5	8	22	3	6½	22	3	10

Explanation of Drawing at pages 56 57.

The port backstay should be 1½inch longer, which will allow the rise at the mast head.

Port backstay foremast leg, 22fm. 3ft. 8in.; after, 22fm. 3ft. 11½in.

FORE TOP GALLANT STAY.

5-inch Rope.

	Fthm.	Ft.	Inch.
Length from the fore top gallant-mast head, to the jib-boom end will be -	23	4	0
From ditto to knight-head, 81 ft. + 142 ft. = 223 ft. - - - - - -	13	3	0
Length of rope required - - -	37	1	0

What the rope stretches will allow for the eye, and for going down through the martingale up to the knight-head.

An eye is spliced in one end to go over the top gallant funnel, for the length, once round the funnel and once the round of the rope, that length must be served for the eye, one foot from the end.

To splice the eye, enter the marlinspike close to the service, put the strands in once and a half, and serve over it.

FORE ROYAL BACKSTAYS.

3½-inch Rope.

Take the length of the foremast from the deck to lower side of trestletree, that will be - - - - - - -	9	1	0
And topmast, from hounds to heel, 54 ft. 2 in, + 65 ft. = 109 ft. 2 in. - -	9	0	2
Top gallant-masts, ditto ditto 29 ft. + 109 ft. 2 in. = 138 ft. 2 in. - - -	4	5	0
And royal mast is 19 ft. + 138 ft. 2 in. = 157 ft. 2 in. . - - -	3	1	0
The distance to place the warping pins would be - - - - - -	26	1	2
Multiplied by 2 for one pair - - -			2
Length of one pair, No. 1 - - -	52	2	4
Ditto ditto, No. 2 - - -	52	2	10
Length of rope required for two pair -	104	5	2

	Fthm.	Ft	Inch.
What the rope stretches will allow for the eye, and breadth of beam. Length of service for the eye, one fifth of the length of the royal mast, gives - -	0	3	9

Serve each leg from the eye

An eye is seized in the bight, to go over the royal mast-head, the length of this is once round the royal mast, and once the round of rope.

A thimble is seized in each pair, close to the seizing of the eye, for the royal lifts.

Length of the service in wake of fore-yard :

From the seizing of the eye to the commencement of the service would be -	17	0	2

That would be the length of the topmast, top gallant mast, and royal mast. Serve 14 ft. down each leg.

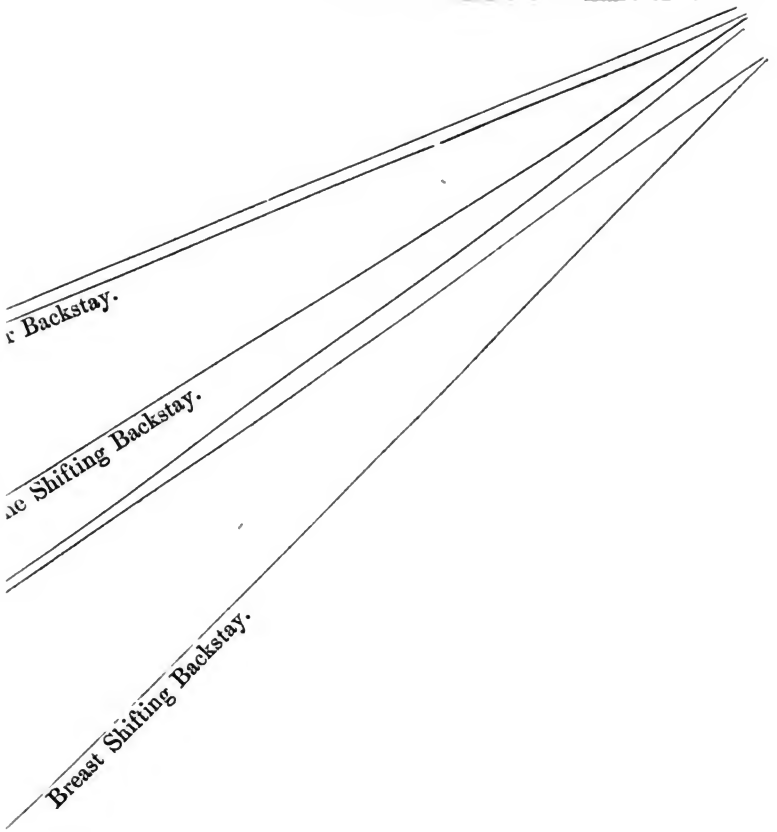
For turning the block in the breast backstay, and thimble in the after backstay, viz:

The length of the four masts would be -	26	1	2
Breadth of beam given for the breast backstay - - - - - -	0	1	6
1 ft. 6 in. + 157 ft. 2 in. = 158 ft. 8 in., drift for setting up 8 ft., — 158 ft. 8 in. = 150 ft. 8 in., that would be the length of breast backstay from the seizing of the eye to lower part of block - -	25	0	8
The after backstay gives 3 ft. more for going aft, 3 ft. + 158 ft. 8 in. = 161 ft. 8 in., drift for setting up, 8 ft. — 161 ft. 8 in. = 153 ft. 8 in. - - - - -	0	3	0
Length of after backstay, from seizing to thimble - - - - - - -	25	3	8

After Leg

Foremast Leg of the

Breast Back



or explanation of this Diagram, see pages 53 & 61.

FORE ROYAL STAY.

	Fthm.	Ft.	Inch.
Lengths from the royal mast-head to the flying jib-boom end will be - -	26	4	0
From ditto to knight-head 98 ft. + 160 ft. = 258 ft. - - - - - -	16	2	0
Length of rope required would be - -	43	0	0

An eye spliced in one end after it is served to go over the royal mast-head, the length required for it would be once the round of the mast-head, and once the round of rope. To serve it, put the strands of the splice in once and a half and serve it over.

What the rope stretches will allow to reeve through the dolphin striker, and come up into the head.

MAIN SHROUDS.

Demonstration for cutting them by the following scale.

The length of mast, from deck to lower side of trestletrees - - - - -	10	2	0
Depth of trestletree and bolster, 2 ft. 8 in. + 62 ft. = 64 ft. 8 in. - - -	0	2	8
Fore part of channels below deck 1ft. 4in. + 68 ft. 8 in. = 66 ft. - - - -	0	1	4
Depth of channels, 6in. + 66 ft. = 66ft. 6in.	0	0	6
A perpendicular line drawn from the mast would be - - - - - -	11	0	6
And an horizontal line to the right of the mast for the breadth of beam, 24ft. 9in. that is, from the centre part of the mast hole, to the outer edge of the channels, abreast the foremast dead eye.			
The breadth of beam gives for takiug the shroud out to channels, 4ft. 6in. + 66ft. 6 in. = 71 ft. - - - - - -	0	4	6
Length from the upper part of bolster to outer edge of channel - - -	11	5	0

	Fthm.	Ft.	Inch.
Place the warping pins distant apart -	11	5	0
Multiply it by 2 - - - - -			2
Length of No. 1 pair of Shrouds - -	23	4	0
Ditto of No. 2 pair - - - -	24	0	0
Ditto „ 3 ditto - - - -	24	2	0
Ditto „ 4 ditto - - - -	24	4	0
Ditto „ 5 ditto - - - -	25	0	0
Ditto „ 6 ditto - - - -	25	2	0
Ditto „ 7 ditto - - - -	25	4	0
Ditto „ 8 ditto - - - -	26	0	0
No. 9 pair is fitted as a single shroud -	26	2	0
Allow for half the eyes and splicing -	3	0	0
Length of rope required - - -	228	0	0

These shrouds are warped round the pins the same as the fore shrouds.

Length of service for the eye is 1-3rd the length of mast, from deck to lower side of trestletree - - - - -	3	2	8

From the pin, draw a chalk line straight athwart all the shrouds, except No. 9 pair, and the fore legs of Nos. 1 and 2 pair, these two legs being served all the way down.

They are marked and fitted the same way as for the foremast.

Dimensions for the length required for the eye after the shroud is bent up.

The round of mast head is 10 ft. 4 in.

Half the round of masthead - - ·	0	5	2
One third of one square $10\frac{1}{2}$ in. + 5ft. 2in. = 6 ft. $0\frac{1}{2}$ in. - - - - -	0	0	$10\frac{1}{2}$
That would be from the inside of the eye to the first turn of the seizing - -	1	0	$0\frac{1}{2}$

SCALE FOR TURNING DEAD EYES IN THE MAIN RIGGING.

Before the mast is steeped.

	Fm.	Ft.	Inch.
The length of main mast from the deck to the uppermost part of bolster - -	10	4	8
And the foremast part of channels below deck - - - - - - -	0	1	4
Draw a pendicular line for the mast at -	11	0	0

This includes the channel below deck.

Draw an horizontal line to the right of it, 23ft. 9in. for the breadth of beam, that would be from the mast to outer edge of channels abreast of the foremast dead eye.

The breadth of beam gives 4 ft. + 66 ft. = 70 ft. - - - - - - -	0	4	0
Length of foremast shroud, from bolster to channels - - - - - -	11	4	0
Draw another mast, the length of the foremast shroud, with $\frac{1}{4}$ of an inch rake for every 6 feet - - - - -	11	4	0

Draw an horizontal line to the left of it, for the length of channels, which would be 33 ft. that is, from the foremast dead eye to the after one in the channels.

Draw every shroud separate, from the upper part of bolster to channels, abreast of its own dead eye, leaving Nos 1, 3, and 10 as spare dead eyes, for there are 12 in number in the main channels.

When the shroud is over the mast head, the distance the seizing would be from the mast is 1ft. 3in. — 70ft. =68 ft. 9 in.

What one shroud rises above the other at the mast-head is 3 inches.

In the drawing, the channels are in a straight line, but the channels in the ship rises at the after part 7 inches, as is shown in the table at each shroud, (See p. 56 57).

Drift for setting the shrouds up would be 1 fm. 1ft.

From channel to lower part of dead eye in shroud, 7 ft.—68 ft. 9 in.=61 ft. 9 in.

The dead eyes are 1 ft. 6 in. above the channels, that will leave 5 ft. 6 in. between the dead eyes in the shrouds, and dead eyes in channel, for setting up.

By the drawing, measure 7 feet perpendicular from the channels up the foremast shroud, and draw a line straight through all the shrouds, at 7 feet perpendicular from channels, it will be found to measure from the channels on the after shroud 7 ft. 9 in.

The same in proportion for every shroud going aft, which is shown in the tables.

17-inch Dead eye.

Length of shroud for going round the dead eye.

The standing part takes up going half round the dead eye, 11 in.+61 ft. 9 in.=62 ft. 8 in.

Length from the lower part of dead eye, to the nip that goes round the standing part of the shroud, will be half the round of dead eye and once the round of rope, that is, 3 ft. 0½ in.+62 ft. 8 in.=65 ft. 8½ in.

The foremast shroud being served all the way down, will not stretch so much as the other shrouds, therefore allow 6 in. on that leg more than the others. 6 in. +65 ft. 8½ in.=66 ft. 2½ in.

	Fthm.	Ft.	In.
That would give the length of the starboard foremast shroud, from the seizing of the eye to the nip that goes round the standing part - - - -	11	0	2½

These shrouds will be seized for the dead eyes, in the same manner as the foremast.

A Table for turning in the Dead Eyes in Main Shrouds, Cutter Stay fashion, before the mast is steeped; shewing the number of Dead Eyes in the channel, and the Distance they are apart.

Number of dead eyes in the main channel	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.	No. 8.	No. 9.	No. 10.	No. 11.	No. 12.
Distance dead eyes are from each other	Spare dead eye.	fm. ft. in. 0 1 8	Spare dead eye.	fm. ft. in. 0 3 4	fm. ft. in. 0 5 0	fm. ft. in. 0 1 10	fm. ft. in. 0 2 0	fm. ft. in. 0 2 0	fm. ft. in. 0 5 7	Spare dead eye.	fm. ft. in. 0 4 6	fm. ft. in. 0 7 0
Lengths from the upper part of bolster to the channels ..... —		11 4 0		11 4 2	11 4 5	11 4 10	11 5 2	11 5 6	12 0 8		12 1 10	12 4 6
Distance seizing of eye from mast —		0 1 3		0 1 3	0 1 3	0 1 3	0 1 3	0 1 3	0 1 3		0 1 3	0 1 3
What the channel rises going aft... —		11 2 9 0 0 0		11 2 11 0 0 0	11 3 2 0 0 0½	11 3 7 0 0 1	11 3 11 0 0 2	11 4 3 0 0 2½	11 5 5 0 0 4		12 0 7 0 0 5½	12 3 3 0 0 7
Drift for setting the shrouds up ... —		11 2 9 1 1 0		11 2 11 1 1 0	11 3 1½ 1 1 0	11 3 6 1 1 0	11 3 9 1 1 0	11 4 0½ 1 1 0	11 5 1 1 1 0		12 0 1½ 1 1 0	12 2 8 1 1 0
On the after shrouds for sheer ..... —		10 1 9 0 0 0		10 1 11 0 0 0	10 2 1½ 0 0 0½	10 2 6 0 0 1	10 2 9 0 0 2	10 3 0½ 0 0 2½	10 4 1 0 0 4		10 5 1½ 0 0 6	11 1 8 0 0 9
Standing part of shroud takes up going half round the dead eye..... +		10 1 9		10 1 11	10 2 1	10 2 5	10 2 7	10 2 10½	10 3 9		10 4 7½	11 0 11
Length from lower part of dead eye to the nip..... ..... +		0 0 11 0 3 0½		0 0 11 0 3 0½	0 0 11 0 3 0½	0 0 11 0 3 0½	0 0 11 0 3 0½	0 0 11 0 3 0½	0 0 11 0 3 0½		0 0 11 0 3 0½	0 0 11 0 3 0½
What one shroud rises above the other at the mast head..... +		0 0 0		0 0 0	0 0 6	0 0 6	0 1 0	0 1 0	0 1 6		0 1 6	0 2 0
Allow 6in. on the foremast leg, which being served all the way down, it will not stretch as much as the other shrouds ..... +		0 0 6		0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		0 0 0	0 0 0
Length of starbd. shrouds from seizing of eye to nip that goes round the standing part of shroud for dead eyes, put a yarn on for a mark		11 0 2½		11 5 10½	11 0 6½	11 0 10½	11 1 6½	11 1 9½	11 3 2½		11 4 1	12 0 10½
What each port shroud rises above the starboard.....+		0 0 3		0 0 3	0 0 3	0 0 3	0 0 3	0 0 3	0 0 3		0 0 3	0 0 3
Length of port shrouds from seiz. to nip		11 0 5½		11 0 1½	11 0 9½	11 1 1½	11 1 9½	11 2 0½	11 3 5½		11 4 4	12 1 1½

FORE PENDANTS.

After the fore and main shrouds are cut out, the remains of the hawsers that are left will cut into fore and main pendants, and deck stoppers.

	Fthm.	Ft.	In.
Length to cut the starboard fore pendant	7	5	7½

A thimble is spliced at each end.

The strands are put in once and a half.

Set it up and stretch it 6 inches to the fathom.

It is wormed, parcelled, and served, from thimble to thimble, the same as the shrouds.

Bend the pendant up to form the eye; let the after leg be 6 feet longer than the foremast one.

The eye is hove to, and seized the same as the shrouds, and of the same length.

Dimensions for the length of pendants, when fitted:

Long leg, from the seizing of the eye to thimble, one third the length of mast, from deck to the upper part of bolster, would give - - - - -	3	1	2
Short leg, 6ft. less, would be 13ft. + 19 ft. 2 in. = 32 ft. 2 in. - - - -	2	1	0

Length of rope it takes for the eye.

The round of the mast-head would be 9 ft. 6 in. - - - - -	1	3	6
And two thirds of one square, 1 ft. 7 in. + 9 ft. 6 in. = 11 ft. 1 in. - . -	0	1	7
And once and a half round the rope, 1 ft. 4½ in. + 11 ft. 1 in. = 12 ft. 5½ in. + 32 ft. 2 in. = 44 ft 7½ in. - -	0	1	4½

What the rope takes up going round the thimble.

The standing part takes up for going half round the thimble, 4 in. × 2 in. = 8 in. -	0	0	8

	Fthm.	Ft.	Inch.
From the lower part of thimble to the whippen, or the first strand entered, would be 1 ft. 2 in. × 2 = 2 ft. 4 in. + 8in. = 3 ft. + 44 ft. 7½ in. = 47 ft. 7½ inches. - - - - -	0	2	4
The length of rope it takes for the starboard pendants will be - - -	7	5	7½

It will stretch 3 ft. 8 in., which will be sufficient for the two splices.

The port pendant should be cut 6 in. longer, that will be 3 in. on each leg, to allow for the rise at the mast-head.

MAIN PENDANTS.

Length to cut the starboard pendant is -	8	5	8

They are fitted the same as the fore.

The eye is seized the same length as main shrouds.

To prove the lengths:

Length of rope for the eye, is once the round of mast-head, viz: 10 ft. 4 in., and two-thirds one square, 1 ft. 9½ in. + 10 ft. 4 in. = 12 ft. 1½ in., and once and a half the round of rope is 1 ft. 4½ in. + 12 ft. 1½ in. = 13 ft. 6in.

Length it takes for the eye - -	2	1	6
Long leg, from seizing to thimble, 21 ft. 7 in. + 13 ft. 6 in. = 35 ft. 1 in. - -	3	3	7
Short leg, 15ft. 7in. + 35ft. 1in. = 50ft. 8in.	2	3	7
Length for the two thimbles, 3 ft. + 50 ft. 8 in. = 53 ft. 8 in. - - - -	0	3	0
Length of rope required for the starboard pendant - - - - - -	8	5	8

What the rope stretches will be sufficient to splice the two thimbles in.

Port pendants should be 6 in. longer than starboard.

MAIN STAYS.

13-inch Rope.

Dimensions for the lengths :—

	Fthm.	Ft.	Inch.
From the after part of mast-head, to the crosspiece of the fore bolts before the foremast, where the stays set up to, will be	18	3	0
Length of the half collar 20 ft. 8 in. + 111 ft. = 131 ft. 8 in. - - -	3	2	8
And to splice it will take 2ft. 6in. + 131ft. 8 in. = 134 ft. 2 in. - - - - -	0	2	6
Length of rope required for one stay -	22	2	2

What the rope stretches will allow sufficient to make the Flemish eyes.

These stays are fitted the same as the fore.

Dimensions for the length of the stay when fitted, from the eyes to the nip that goes round the standing part of the stay, for the heart.

From the after part of mast-head to the crosspiece, will be 111 ft., allow 6 ft. drift for setting up, 6 ft. — 111 ft. = 105 ft.

From the eyes to lower part of heart -	17	3	0

18-inch Heart, the round of it is 3 ft. 8 in.

The length it takes for the heart :—

The standing part for going half round the heart takes up 6 in. - - -	0	0	6
Length from lower part of heart to the nip, will be half the round of heart -	0	1	10
And once the round of stay 1ft. 1in. + 1ft. 10 in. = 2 ft. 11 in. + 6 in. = 3 ft. 5 in. + 105 ft. = 108 ft. 5 in. - - -	0	1	1
Length of stay, from the eyes to the nip	18	0	5

DECK STOPPERS.

These are cut from the remnants, after the lower rigging and pendants are cut out, they are six in number.

The length of each would be two fathoms.

There is a double wall knot made at one end, and a shackle and thimble spliced at the other.

MAIN TOPMAST SHROUDS.

Dimensions for cutting them :

	Fthm.	Ft.	Inch.
Take the length of topmast, from hounds to heel - - - - - - -	10	1	0
Place the warping pins that distance apart.			
Multiply it by 2 - - - - - -			2
Length of No. 1 pair of shrouds - -	20	2	0
Ditto „ 2 ditto - - - -	20	3	3
Ditto „ 3 ditto - - - -	20	4	6
Ditto „ 4 ditto - - - -	20	5	9
No 5 pair is for two single shrouds -	21	1	0
Allow for half the eyes and splicing -	1	1	0
Length of rope required - - -	104	5	6

Warp the shrouds the same as the fore.

Length of service for the eye part, is one fifth the length of topmast. from hounds to heel - - - - - - -	2	0	0

At 12 ft. from the pin, draw a chalk mark straight athwart the shrouds, except the foremast leg of the first and second pair, for they are served all the way down; put a yarn on the chalk marks.

Cut the bights at the lower pin and whip the ends.

Mark the shrouds at the centre of the eye with 2 yarn spunyarn, the same as the fore, and they are fitted the same way.

The length for the eye is the round of the masthead, and 2-3rds of one square	0	5	11½
From the inside of the eye to the first turn of seizing - - - -	0	2	11¾

There are two 26-inch sister blocks, seized in the first and second pair of shrouds.

Take the same dimensions as for the fore.

TURNING THE DEAD EYES IN THE MAIN TOPMAST SHROUDS, BEFORE THE MAST IS STEEPED.

The table will explain the dimensions &c. of the foremast starboard shroud, and also the others, under their respective numbers.

Table for turning the Dead Eyes in Main Topmast Shrouds.

Number of the respective shrouds		No. 1.			No. 2.			No. 3.			No. 4.			No. 5.		
		fm.	ft.	in.	fm.	ft.	in.	fm.	ft.	in.	fm.	ft.	in.	fm.	ft.	in.
From the upper part of bolster to the top rim		10	1	8½	10	1	7½	10	1	8	10	1	8	10	1	9
Distance the seizing of the eye is from mast	−	0	1	0	0	1	0	0	1	0	0	1	0	0	1	0
		10	0	8½	10	0	7½	10	0	8	10	0	8	10	0	9
Allow for rise at the mast head.....	+	0	0	0	0	0	0	0	0	4	0	0	4	0	0	8
Standing part of shroud takes up going half round the dead eye	+	0	0	6	0	0	6	0	0	6	0	0	6	0	0	6
Length of lower part of dead eyes to the nip	+	0	2	0	0	2	0	0	2	0	0	2	0	0	2	0
Allow for leg being served.....	+	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0
Allow 5ft. drift from top rim to dead eye in the shroud.....	+	10	3	8½	10	3	1½	10	3	6	10	3	6	10	3	11
	−	0	5	0	0	5	0	0	5	0	0	5	0	0	5	0
Length of starboard shrouds		9	4	2½	9	4	1½	9	4	6	9	4	6	9	4	11
What port shrouds rises above starboard	+	0	0	2	0	0	2	0	0	2	0	0	2	0	0	2
Length of port shrouds from seizing to nip ...		9	4	10½	9	4	3½	9	4	8	9	4	8	9	5	1

	Fthm.	Ft.	Inch.
The length of topmast, from hounds to fid-hole. - - - - - -	9	4	7
Depth of topmast crosstrees and bolster, 1 ft. $7\frac{1}{2}$ in. + 58 ft. 7 in. = 60 ft. $2\frac{1}{2}$ in. -	0	1	$7\frac{1}{2}$
Draw a perpendicular line for length of the topmast - - - - - -	10	0	$2\frac{1}{2}$
And an horizontal line for breadth of half top, that is, from the mast to top rim, 10 ft. 6 in., and taking the shroud out of the top rim, gives - - - -	0	1	6
Length of foremast shroud, from upper prat of bolster to top rim - - -	10	1	8

Draw the topmast the length of the foremast shroud, with $\frac{1}{4}$ of an inch rake to every 6 feet, and an horizontal line to the left of it, for the length of top, or from the foremast dead eye to the after one, which will be 8 feet 10 inches.

If the shroud is over the mast-head, the seizing of the eye will be 1 ft. from the mast, 1ft.—61 ft. 8 in. = 60 ft. 8 in.

Allow 2 inches on every following pair, for the rise at the mast-head.

Standing part of shroud takes up going half round the dead eye, 6 in. + 60 ft. 8 in. = 61 ft. 2 in.

Length from lower part of dead eyes to nip would be half the round of dead eyes, and once the round of rope, 2 ft. + 61 ft. 2 in. = 63 ft. 2 in.

Allow 5 ft. drift, from top rim to lower part of dead eye in shroud, 5 ft.—63 ft. 2 in. = 58 ft. 2 in.

This shroud being served all the way down, it will not stretch as much as the other shrouds, therefore allow 6 in. on this shroud more than the others, 6 in. + 58 ft. 2 in. = 58 ft. 8 in.

Length of starboard foremast shroud, from seizing of the eye to nip - -	9	4	8

MAIN TOPMAST BACKSTAY.

Dimensions of the lengths to cut them:

	Fthm.	Ft.	Inch.
Take the length of mainmast, from deck to lower side of trestletrees to be -	10	2	0
And topmast, from hounds to heel, 61 ft. +62 ft. = 123 ft. - - - - -	10	1	0
The channels of the breast backstay, below deck, - - - - - -	0	1	0
Depth of topmast crosstrees and bolster, 1 ft, 7½ in. + 124 ft. = 125 ft. 7½ in. -	0	1	7½
Length between warping pins should be	20	5	7½
Multiply by two, for one pair - -			2
Length to cut the breast backstay - -	41	5	3
Ditto No. 1 starboard after backstay -	42	0	8
Ditto No. 2 port after backstay - -	42	2	1
Length of rope required, if the breast backstays are fitted with a cut splice -	126	2	0

They are warped round the pins, and fitted in the same manner as the fore.

The service for the eye part is one foot more than the shrouds.

The service in wake of top rim and main yard, will be 3 ft. less than the topmast is from the hounds to the heel; that would be from the seizing of the eye to the commencement of the service, and serve 19 ft down.

If the breast backstays are to be fitted with two single eyes, they must be the last pair warped round the pins, and 6 ft. more for the half of the eyes, and the warping pin placed 9 in. further apart.

What the rope stretches will be sufficient for the eyes and spread to the channels.

SCALE FOR TURNING DEAD EYES IN CUTTER STAY FASHION, BEFORE THE MAST IS STEEPED.

	Fthm.	Ft.	Inch
The length of mainmast from deck to lower part of trestletrees, will be - -	10	2	0
And topmast from hounds to heel - -	10	1	0
Channels below deck for breast backstay	0	1	2
Depth of crosstrees and bolster - -	0	1	7½
Draw a perpendicular line from the mast	20	5	9½

And an horizontal line to the left of it for the breadth of beam.

Breadth of beam gives for the breast backstay - - - - - - -	0	2	9
Length of breast backstay from the seizing of the eye to channels - - -	21	2	6½

Draw another mast the length of the breast backstay, with ¼ of an inch rake to every 6 feet.

Draw an horizontal line to the left of it for the length of the channels, 33ft. that is from the foremast dead eye to the after topmast backstay dead eye.

The breast backstay will set up 10 feet abaft the foremast dead eyes, and the foremast leg of the after backstay set up 24 feet abaft the breast backstay.

That gives 4ft. more for going aft, 4ft. + 128ft. 6in. = 132ft. 6in. - - -	0	4	0
Length of the foremast leg of the after backstay, from the seizing of the eye to channels - - - - - - -	22	6	0½
The after leg for going 1ft. further aft, gives 3in. + 132ft. 6½in. = 132ft. 9½in.	0	0	3
Length of the after backstay from the seizing to the channels - - -	22	0	9½

TURNING DEAD EYES IN MAIN TOPMAST BACKSTAY.

Length of rope it takes for the dead eyes:

The standing part takes up going half round the dead eyes. 6in. + 132ft. 9½in. = 133ft. 3½in.

From the lower part of dead eye to the nip takes half the round of dead eye, and once the round of rope, that would be 2ft. 2½in. + 133ft. 3½in. = 135ft. 6in.

Allow 2½in. for the rise at mast head, 2½in. + 135ft. 6in. = 135ft. 8½in.

Then allow 7ft. 6in. drift for setting up, that is, from channels to the lower part of dead eyes in backstay, 7ft. 6in.—135ft. 8½in. = 128ft. 2½in.

The after part of channels rises 7in.—128ft. 2½in = 127ft. 7½in.

Length of the starboard after backstay, from seizing of the eye to the nip, that goes round the standing part of backstay, for the dead eye, will be - - - Fthm. 21 Ft. 0 In. 7½

The following table will give the lengths of them commencing from the length of mast, including channels below the deck.

TABLE FOR TURNING DEAD EYES IN MAIN TOPMAST BACKSTAYS.

Number of the backstays each side ...	No. 1.			No. 2.			No. 3.		
	fm.	ft.	in.	fm.	ft.	in.	fm.	ft.	in.
From the length of mast, channels below deck included	20	5	9½	20	5	9½	20	5	9½
For the breadth of beam	0	2	9	1	0	9	1	1	0
	21	2	6½	22	0	6½	22	0	9½
Channels rise aft	0	0	0	0	0	6	0	0	7
	21	2	6½	22	0	0½	22	0	2½
Standing part takes up	0	0	6	0	0	6	0	0	6
From lower part of dead eye to nip	0	0	0	0	2	2½	0	2	2½
For the rise at mast head	0	0	0	0	0	2½	0	0	2½
	21	3	0½	22	2	11½	22	3	1½
Drift for setting up	1	1	6	1	1	6	1	1	6
Length of the starboard backstays from the seizing of the eye to the nip	20	1	6½	21	1	5½	21	1	7½
The breast backstay is from the seizing of the eye to lower part of the block. There is an eye spliced 2ft. long, and a 12in. double block seized in it.									
What the port backstays rise above the starboard length of port backstay.	0	0	0	0	0	2½	0	0	2½
	20	1	6½	21	1	8	21	1	10

MAIN TOPMAST STAYS.

Dimensions of the lower stay:

	Fm.	Ft.	Inch.
From the after part of topmast head to the block at the foremast head - -	18	5	0
From ditto to the collar it sets up to –	1	2	0
8ft. + 113ft. = 121ft. the half collar when fitted - - - - - -	1	3	0
9ft. + 121ft. = 130ft. allow 2ft. for splicing the half collar - - - - -	0	2	0
2ft. + 130ft. = 132ft. What the rope stretches will be sufficient to make the Flemish eyes.			
Length of rope required for the upper stay	22	0	0

UPPER STAY.

From the after part of topmast head to the chock between the fore trestletrees -	18	3	0
From ditto to deck, 57ft. + 111ft. = 868ft.	9	3	0
The half collar when fitted, 9ft. + 168ft. = 177ft. - - - - - - -	1	3	0
What the rope stretches, will make the Flemish eyes and splice the half collar.			
Length of rope required for the upper stay	29	3	0

MAIN TOPMAST STAY COLLARS.

Length required from eye to eye on the straight:

Take the round of foremast head at 9ft. 6in.	1	3	6
The round of the thimble, 1ft. 4in + 9ft. 6in. = 10ft. 10in. - - - -	0	1	4
Half the round of rope, $3\frac{1}{2}$in, + 10ft. 10in. = 11ft $1\frac{1}{2}$in. - - - - -	0	0	$3\frac{1}{2}$
The length of collar from eye to eye -	1	5	$1\frac{1}{2}$
Length when fitted from the thimble to the back of the eyes - - - -	0	4	9

What the seizing and collar takes up in going round the mast will give sufficient drift for lashing.

The lower collar, if of rope, is fitted in the same manner, but it is frequently an iron bound block bolted to a bolt through the mast.

MAIN TOPMAST FUTTOCK SHROUDS.

After the fore and main topmast shrouds are cut out, the remainder will be sufficient for the futtock shrouds.

	Fthm.	Ft.	Inch.
The length of the after main crosstree from the trestletrees will be - -	1	4	3
That will be the dimensions for the necklace round the mast, from the lower edge of trestletrees.			
The depth of trestletrees, 1ft. 8in. + 10ft. 3in. = 11ft. 8in. - - - - -	0	1	8
Draw a mast with the necklace round it from the upper part of trestletrees to the necklace - - - - - - -	1	5	11
Draw an horizontal line for the width of half top from mast - - - -	1	4	3
With a pair of compasses measure from the necklace to the outer edge of the top, for No. 2 futtock shroud, because that shroud would be abreast of the centre of the mast, the length will be found to be	2	3	4

Draw the circumference of the mast and the top rim, the length of the second shroud from the mast.

The futtock plate holes will be 2ft. 2in. apart.

Measure for each shroud separately,

It will be found that from the upper part of plate hole in the top rim, to the necklace, will be of the undermentioned lengths:—

No. of Shrouds	No. 1.			No. 2.			No. 3.			No. 4.			No. 5.		
	fm.	ft.	in.	fm.	ft.	in.	fm.	ft.	in.	fm.	ft.	in.	fm.	ft.	in.
Lengths	2	3	8	2	3	4	2	3	10	2	4	4	2	5	4
Futtock plate.....	0	1	3	0	1	3	0	1	3	0	1	3	0	1	3
	2	2	5	2	2	1	2	2	7	2	3	1	2	4	1
Drift setting up... ..	0	1	0	0	1	0	0	1	0	0	1	0	0	1	0
Length when fitted from bosom of hook	2	1	5	2	1	1	2	1	7	2	2	1	2	3	1
Length of hook.....	0	0	9	0	0	9	0	0	9	0	0	9	0	0	9
Length for thimble to splice with, & eye	2	0	8	2	0	4	2	0	10	2	1	4	2	2	4
	0	4	6	0	4	6	0	4	6	0	4	6	0	4	6
Length rope required for each shroud.....	2	5	2	2	4	10	2	5	4	2	5	10	3	0	10

	Fthm.	Ft.	Inch.
Length of rope required for one side -	14	4	0
Length of rope to be drawn - - -	29	2	0

The futtock plates will be of equal length.

To find the length of rope required to No. 1 shroud.

Deduct the length of futtock plate 1ft. 3in—15ft. 8in. =14ft. 5in. and 1ft. drift for setting up, 1ft.—14ft. 5in. =13ft. 5in.

That will be the length from the bosom of the hook to the centre of the lashing eye 2 1 5

Length of hook, 9in.—13ft. 5in.=12ft. 8in. it will take 2ft. 3in. for going half round the thimble, and to splice with, 2ft. 3in. + 12ft. 8in.=14ft. 11in., and for half the lashing of eye, and to splice it, will be 2ft. 3in. + 14ft. 11in.=17ft. 2in.

Length of rope required for No. 1 shroud 2 5 2

These shrouds are fitted the same as the fore.

MAIN TOP GALLANT SHROUDS.

4½-Inch Rope.

	Fthm.	Ft.	Inch.
The length of topmast, from hounds to heel - - - - - - -	10	1	0
And top gallant-mast, from hounds to heel 32 ft. 6 in. + 61 ft. = 93 ft. 6 in. - -	5	2	6
Place the warping pins distant apart -	15	3	6
Multiply by two - - - - -			2
Length of No. 1 pair - - - - -	31	1	0
Ditto No. 2 pair - - - - -	31	1	2
Length of rope required - - -	62	2	2

These shrouds are fitted the same as the fore top gallant shrouds.

MAIN TOP GALLANT BACKSTAYS.

5-Inch Rope.

The length of mainmast, from deck to lower side of trestletrees - - -	10	2	0
And the topmast, from hounds to heel, 61 ft. + 62 ft. = 123 ft. - - -	10	1	0
And top gallant-mast, from hounds to heel, 32 ft. 6 in. + 123 ft. = 155 ft. 6 in.	5	2	6
Place the warping pins distant apart -	25	5	6
Multiply by two - - - - -			2
Length of No. 1 pair - - - - -	51	5	0
Ditto No. 2 pair - - - - -	51	5	2
Length of shifting backstay - - -	25	5	0
Length of rope required - - - -	129	3	2

These backstays are fitted the same way as the fore top gallant backstays.

Take the same dimensions for turning the thimbles as in the fore.

MAIN TOP GALLANT STAY.

5-Inch Rope.

	Fthm.	Ft.	Inch.
From the main top gallant mast-head to fore topmast crosstrees - - - -	16	2	0
And from ditto to the fore top, 52 ft. +98 ft.=150 ft. - - - - -	8	4	0
The length of rope required - - -	25	0	0

This stay is fitted the same as the top gallant stay.

MAIN ROYAL BACKSTAYS.

Length of mainmast, from deck to lower side of trestletrees - - - - -	10	2	0
And topmast, from hounds to heel, 61 ft. +62 ft.=123 ft. - - - - -	10	1	0
Top gallant mast, from hounds to heel, 32 ft. 6 in.+123 ft. 1=55 ft. 6 in. -	5	2	6
Length of royal mast, 21 ft.+155 ft. 6 in. =176 ft. 6 in. - - - - -	3	3	0
Place the warping pins distant apart -	29	2	6
Multiply it by two - - - -			2
Length of No. 1 pair - - - -	58	5	0
Ditto No. 2 pair - - - -	58	5	0
Length of rope required - - -	117	4	0

These stays are fitted the same as the fore.

Dimensions for turning the block in the breast backstay, and the thimble in the after backstay.

Length of the four masts - - -	29	2	6
Breadth of beam for the breast backstay	0	1	9
Drift from channels for setting, would be	29	4	3
8 ft. — 178 ft. 3 in.=170 ft. 3 in. - -	1	2	0

	Fthm.	Ft.	Inch.
Length of breast backstay, from seizing of the eye to lower part of block - -	28	2	3
The after backstay gives 3 ft. 3in. more for going aft, 3 ft. 3 in. + 170 ft. 3 in. = 173 ft. 6 in. - - - - -	0	3	3
Length from seizing to thimble - -	28	5	6

Drift for setting up the same as breast backstay.

MAIN ROYAL STAY.

From the main royal mast-head to the fore top gallant mast-head - -	16	0	0
From ditto to the foretop is - - -	13	2	0
Length of rope required - - -	29	2	0

This stay is fitted the same as the fore royal stay.

MIZEN SHROUDS.

Dimensions for cutting them by the following scale.

The length of mizenmast, from deck to lower edge of trestletrees will be -	8	4	8
Depth of trestletrees, 1 ft. 2 in. + 52 ft. 8 in. = 53 ft. 10 in. - - - -	0	1	2
Depth of bolster. 8 in + 53 ft. 10 in. = 54 ft. 6 in. - - - - - -	0	0	8
Fore part of channels below deck, 1 ft. + 54 ft. 6 in. = 55 ft. 6 in. - - -	0	1	0
And the depth of channels, 6 in. + 55 ft. 6 in. = 56 ft. - - - - -	0	0	6
	9	2	0

If the shroud was over the mast-head, the seizing of the eye would be from the mast 1 ft.—59 ft. 6 in.= 58 ft. 6 in.

In the drawing the channel is a straight line, but in the ship it rises aft 7 inches.

It is shown in the following table that 6 feet is allowed for drift in setting up from channels. 6 feet—58 feet 6 inches=52 feet 6 inches.

What one shroud rises above the other will be 2½ in.

Length of rope required for the dead eyes.

Standing part takes up going half way round the dead eyes, 6 in. + 52 ft. 6 in. = 53 ft.

Length required from lower part of dead eyes to the nip.

Half the round of dead eye and once the round of shroud, 2 ft. 2 in. + 53 ft. = 55 ft. 2 in.

These shrouds should be seized for the dead eyes the same as the fore.

Throat seizing, 1½ inch 4½ fathoms.

End ditto ¼ „ 2½ „

MIZEN BURTON PENDANTS.

5½-inch Rope.

	Fthm.	Ft.	Inch.
Length to cut them would be - -	7	2	0

A thimble is spliced in each end; length of end it will take, is from the lower part of thimble, and to splice with for each, will be 1 ft. 6 in. × 2 ft. = 3 ft. — 44 ft. = 41 ft.

After the thimbles are spliced in, it is set up and stretched 3 ft. 2 in. + 41 ft. = 44 ft. 2 in.

Serve 3 ft. 9 in. each side of the centre, leaving 2 ft. in the centre not served, for splicing the eye; it should be cut at the centre, and a cut splice made to form the eye.

After the eye is spliced, it is set up and wormed with 6 yarn spunyarn, from end to end.

The splices are tapered and marled down, they are parcelled, tarred, and served over with 5 yarn spunyarn, from end to end.

Length when fitted:

	Fthm.	Ft.	Inch.
From the fork of the eye to the thimble, would be one third the length of mast, from deck to lower side of trestletrees, 17 ft. 4 in. × 2 = 34 ft. 8 in. - -	5	4	8
Length for the eye, 7 ft. 6 in. + 34 ft. 8 in. =42 ft. 2 in. - - - - - -	1	1	6
And 1 ft. each side to splice with, 1 ft. × 2 =2 feet. - - - - - -	0	2	0
Length of rope it takes after the thimbles are spliced in and the rope stretched -	7	2	2

MIZEN STAY.

9-inch Rope.

From the after part of mizenmast-head to the eye bolt alongside of mainmast -	14	4	0
Length of half collar, when fitted -	2	1	0
Length for splicing it - - -	0	2	0
Length of rope required - - -	17	1	0

What the rope stretches, will be sufficient to make the Flemish eyes.

After the eyes are made, set it up and serve 13 feet at each end, for the half collar.

Cut off 15 ft. for half collar, and splice it on the other end, to form the collar; this is fitted the same as the fore, 15 ft. — 103 ft. = 88 ft.

Extreme length of stay, when fitted, will be 14 4 0

If the stay is to set up with two legs, one each side of the mast, splice a piece of the same, 16 ft long, into the stay, 16 ft. from the end.

Turn the thimbles in for setting it up, viz: turn a thimble in each leg, at 84 ft. from the back of the eyes, that would allow 4 ft. drift.

MIZEN TOPMAST FUTTOCK SHROUDS.

	Fthm.	Ft.	Inch.
The length of the after mizen crosstree, from the trestletrees, will be - -	1	1	10
Depth of trestletree, 1ft. 2in. + 7ft. 10in. = 9 feet. - - - - -	0	1	2

That would be the dimensions for the necklace round the mast, from the upper part of trestletrees.

Draw a mast with the necklace round it, and from the upper part of bolster to the necklace would be - - -	1	3	0

Draw an horizontal line for the width of the half top, from mast 7ft. 10in. and with a pair of compasses measure from the necklace to the outer edge of top rim, for No. 2 shroud, because that shroud, abreast the centre of the mast, would be 1 fm. 5 ft. 4 in.

Draw the circumference of the mast, and the top rim for the length of No. 2 shroud, from the mast.

The futtock plate holes will be 1ft. 8in. apart, measure for every shroud separately.

The upper part of plate holes in the top rim to the necklace, will be of the undermentioned lengths, under their respective numbers.

Number of the shroud.....	No. 1.			No. 2.			No. 3.			No. 4.		
	fm.	ft.	in.	fm.	ft.	in.	fm.	ft.	in.	fm.	ft.	in.
Length of shroud	1	5	6	1	5	4	1	5	6	2	0	0
Ditto futtock plate	0	1	0	0	1	0	0	1	0	0	1	0
	1	4	6	1	4	4	1	4	6	1	5	0
Drift for setting up..... —	0	1	0	0	1	0	0	1	0	0	1	0
Length when fitted from.....	1	3	6	1	3	4	1	3	6	1	4	0

The bosom of the hook to the lashing eye.

	Fthm.	Ft.	Inch.
From top rim to necklace will be - -	1	5	6

Deduct the length of futtock plate, 1ft — 11ft. 6in. =10ft. 6in, and drift for setting up, 1ft.—10ft. 6in.= 9ft. 6in.

That will leave the length from the bosom of the hook to the lashing eye - -	1	3	6

Length of the hook, 6in. — 9ft. 6in.=9ft. It will take 2ft. for half the round of thimble, and to splice it, 2ft. + 9ft = 11ft, and for half the lashing eye and to splice with will take 2ft. + 11ft.=13ft..

Length of rope required for No. 1 -	2	1	0
Length of rope required for the set, that is, 4 each side - - - -	21	2	8

These shrouds are fitted the same as the fore.

MIZEN TOPMAST SHROUDS.

5-in. Rope.

Dimensions of the lengths:—

The length of topmast from hounds to heel	7	1	9
Place the warping pins at that distance.			
Multiply it by 2 - - - -			2
Length of No. 1 pair - - - -	14	3	6
Ditto 2 „ - - - -	14	4	4
Ditto 3 „ - - - -	14	5	2
Ditto 4 „ - - - -	15	0	0
Length of rope required - - -	59	1	0

These shrouds are warped round the pins, and fitted the same as the fore.

Service for the eye part is 8ft. 6in. from the pin:

The length of the eye, viz. the round of the mast head is - - - -	0	3	8

	Fthm.	Ft.	Inch
From the inside part of the eye to the first turn of seizing - - - - -	0	2	2

That will be half the round of mast head, and one third of one square.

For the seizing, $\frac{1}{4}$inch of $3\frac{1}{2}$fathoms.

A sister block is seized in the first pair of shrouds at 2ft. 6in. from the seizing of the eye and No. 2 pair, the block is seized in at 2ft. 8in. from the seizing of the eyes - - - - - -	0	2	8

The two inches allows for the rise at mast head.

Scale for turning the dead eyes in, before the shrouds are put over the mast head.

Also table explaining the length of the starboard foremast shroud, and the remainder under their respective number.

The length of topmast from hounds to fid hole - - - - - - - -	7	0	6
Depth of topmast crosstree and bolster -	0	1	3
	7	1	9
Draw a perpendicular line for the length of topmast - - - - - -	7	1	9

And an horizontal line for the breadth of half top, from mast to top rim, 8ft. 6in.

Taking the shroud out to top rim gave -	0	1	0
Length of foremast shroud from upper part of bolster to top rim - - -	7	2	9

Draw the topmast the length of the foremast shroud, with $3\frac{1}{4}$in. rake to every 6ft. and an horizontal line to the left of it for the length of top, or from the foremast dead eye to the after one, that is 5ft.

If the shrouds were over the mast head, the seizing of the eye will be from the mast head, 8in.—44ft, 9in. =44ft. 1in. Allow 1¼inch on every following pair for the rise at mast head.

	Fthm.	Ft.	Inch.
The standing part of the shroud takes up going half round the dead eye, 4in.+ 44ft. 1in.=44ft. 5in. - - -	0	0	4
Length it takes from lower part of dead eye to the nip, half the round of dead eye, and once the round of shroud, will be 1ft. 5in.+44ft. 5in.=45ft. 10in. -	0	1	5

Allow 4ft. 6in. drift from the top rim to the lower part of the dead eye in shroud, 4ft. 6in. — 45ft. 10in. =41ft. 4in.

This shroud being served all the way down, will not stretch so much as the others, therefore 3in. must be allowed on this more than the others - -	0	0	3

A Table for turning the dead eyes in.

Number of the dead eyes ...	No. 1.			No. 2.			No. 3.			No. 4.		
Distance between each dead eye	fm.	ft.	in.	fm.	ft.	in.	fm.	ft.	in.	fm.	ft.	in.
	0	0	0	0	1	8	0	1	8	0	1	8
From bolster to top rim.....	7	2	9	7	2	9	7	2	9	7	2	9
From seizing to mast head—	0	0	8	0	0	8	0	0	8	0	0	8
	7	2	1	7	2	1	7	2	1	7	2	1
For rise at mast head..... +	0	0	0	0	0	0	0	0	3	0	0	3
For round the dead eye... +	0	0	4	0	0	4	0	0	4	0	0	4
Lower part of dead eye to nip..... +	0	1	5	0	1	5	0	1	5	0	1	5
Allow for served leg ..... +	0	0	3	0	0	0	0	0	0	0	0	0
	7	4	1	7	3	10	7	4	1	7	4	1
Drift for setting up..... —	0	4	6	0	4	6	0	4	6	0	4	6
Length of starboard shrouds for seizing of eye to nip ...	6	5	7	6	5	4	6	5	7	6	5	7
What the port shroud rises above the starboard.....	0	0	1½	0	0	1½	0	0	1½	0	0	1½
Length of port shrouds	6	5	8¼	6	5	5½	6	5	8½	6	5	8½

Table for turning Dead Eyes in Mizen Shrouds Cutter Stay fashion, before it is put over the mast head.

Number of dead eyes in channel	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.
	fm. ft. in.	fm. ft. in.	fm. ft. in.	fm. ft. in.	fm ft. in.	fm. ft. in
Distance the eyes are apart	0 0 0	0 1 8	0 4 7	0 1 10	0 1 10	0 1 10
Commencing from upperpart of bolster to channels, viz	9 5 0	9 4 10	9 4 10	9 4 10	9 5 0	9 5 2
Distance the seizing of the eye would be from mast —	0 1 0	0 1 0	0 1 0	0 1 0	0 1 0	0 1 0
	9 4 0	9 3 10	9 3 10	9 3 10	9 4 0	9 4 2
What the channel rises aft —	0 0 0	0 0 1½	0 0 4	0 0 5	0 0 6	0 0 7
	9 4 0	9 3 8½	9 3 6	9 3 5	9 3 6	9 3 7
Drift from channel for setting the shroud up —	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0	1 0 0
	8 4 0	8 3 8½	8 3 6	8 3 5	8 3 6	8 3 7
What the shroud rises at the mast head ... +	0 0 0	0 0 0	0 0 5	0 0 5	0 0 10	0 0 10
Standing part takes up going half round the dead eye +	0 0 6	0 0 6	0 0 6	0 0 6	0 0 6	0 0 6
Length of lower part of dead eye to the nip +	0 2 2	0 2 2	0 2 2	0 2 2	0 2 2	0 2 2
Length of starboard shrouds from the seizing of the eye to the nip	9 0 8	9 0 4½	9 0 7	9 0 6	9 1 0	9 1 1
What the port shroud rises above starboard +	0 0 2½	0 0 2½	0 0 2½	0 0 2½	0 0 2½	0 0 2½
Length of port shrouds from seizing to nip ...	9 0 10½	9 0 7	9 0 9½	9 0 8½	9 1 2½	9 1 3½

MIZEN TOPMAST BACKSTAYS.

6½-inch Rope.

	Fthm.	Ft.	Inch.
Length of mizen-mast from deck to the lower side of trestletrees - - -	8	4	8
Topmast from hounds to heel - -	7	1	9
Channels below the deck - - -	0	1	0
Place the warping pins distance apart -	16	1	5
Multiply by 2 - - - - -			2
Length of No. 1 pair - - - -	32	2	10
Ditto No. 2 pair - - - -	32	3	11
Length of rope required - - -	65	0	9

The eye is of the same dimensions as the shrouds.

The service is one foot more.

Seizing for the eye is 1 inch 3½ fathoms.

Service in wake of cross jack yard, viz:

Length of topmast from the hounds to heel, is the length from the seizing of the eye to the commencement of the service, and serve 12 feet down.

Dimensions for turning the dead eyes in cutter stay fashion, before it is put over the mast head.

The length of Mizen mast from deck to lower side of trestletrees - - -	8	4	8
Topmast from hounds to heel - -	7	1	9
Channels below deck - - - -	0	1	0
Depth of crosstrees and bolster - -	0	1	3
	16	2	8
Draw a perpendicular line for the mast at	16	2	8

And an horizontal one to the right of it, 21 feet for the breadth of beam.

There are no breast backstays allowed, but the measure for one is given in the next page, to allow the length of the after ones.

The breadth of beam gives for a breast backstay 2 ft. 6 in. + 98 ft 8 in. = 101 ft. 2 in.

Draw a mast the length of the breast backstay, with 3¼ in. rake to every 6 ft. Fthm. Ft. Inch. 16 5 2

And an horizontal line to the left of it, 14 ft. for the length of channels.

It will be found that the after backstay will be no longer than the breast backstay, owing to the rake of the mast.

The length of the after backstay, from the seizing of the eye to channels, will be 16 5 2

9-inch Dead eye.

For turning the dead eye in.

The standing part takes up, going half round the dead eye, 6 in. + 101 ft. 2 in. = 101 ft. 8 in. - - - - 0 0 6

The lower part of dead eye to the nip, will take half the round of dead eye, and once the round of backstay, 1 ft. 8 in. + 101 ft. 8 in. = 103 ft. 4 in. - 0 1 8

Drift from channels for setting up, 6ft. 6in. — 103ft. 4 in. = 96 ft. 10 in.

Channels rise aft 7 in. — 96 ft. 10 in. = 96 ft. 3 in.

	No. 1.			No. 2.		
Length of the Backstay, from the seizing of the eye to nip, starboard side	Fm.	Ft.	In.	Fm.	Ft.	In.
	16	0	3	16	0	3
Length of port pair	16	0	5	16	0	5

MIZEN TOPMAST STAY.

6-Inch Rope.

Length from the topmast-head to the eyes of the main rigging will be - -	11	5	0
Length of half collar, when fitted -	1	0	6
And 1 ft. for the splice - - -	0	1	0
Length of rope required - - -	13	0	6

What the rope stretches will be sufficient to make the Flemish eyes.

It will take 2 ft. 3 in. end to make each eye.

The eyes are made the same as the fore, and the stay is fitted the same.

MIZEN TOP GALLANT SHROUDS.

3-Inch Rope.

	Fthm.	Ft.	Inch.
The length of top gallant mast, from hounds to heel, will be - - -	4	0	3
And topmast, from hounds to heel -	7	1	9
Place the warping pins distant apart -	11	2	0
Multiply by two - - - -			2
Length of No. 1 pair - - - -	22	4	0
Ditto No. 2 pair - - - -	22	4	6
Length of rope required - - .	45	2	6

They are fitted the same as the fore.

Seizing of the eye, ½ inch 2 fathoms.

MIZEN TOP GALLANT BACKSTAY.

5½in. Rope.

The length of mizenmast, from deck to lower side of trestletrees - - -	8	4	8
And from topmast hounds to heel -	7	1	9
And top gallant-mast, from hounds to heel	4	0	3
Place the warping pins distant apart -	20	0	8
Multiply by two - - - -			2
Length of No. 1 pair - - - -	40	1	4
Ditto No. 2 pair - - - -	40	1	6
Length of rope required - - -	80	2	10

These backstays are fitted in the same manner as the fore, and of the same dimensions for turning the thimbles in.

MIZEN TOP GALLANT STAY.

3½-Inch Rope.

	Fthm.	Ft.	Inch
From top gallant mast-head to main cap	10	0	0
From ditto to top - - - -	3	2	0
Length of rope required - - -	13	2	0

What the rope stretches will make the eye.

This stay is fitted the same as the fore top gallant stay.

MIZEN ROYAL BACKSTAYS.

2¼-Inch Rope.

Length of mizen-mast, measured from the deck to lower side of trestletrees -	8	4	8
From topmast, hounds to heel - -	7	1	9
And from top gallant-mast hounds to heel	4	0	3
Length of royal pole - - - -	2	4	0
Place the warping pins distance apart -	22	5	4
Multiply by 2 - - - - -			2
Length of No. 1 pair - - -	45	4	8
Ditto No. 2 pair - - -	45	4	8
Length of rope required - - -	91	3	4

They are fitted the same as the fore.

MIZEN ROYAL STAY.

From the royal mast-head to the main topmast crosstrees - - - -	10	5	0
And from ditto to top - - -	10	0	0
Length of rope required - - -	20	5	0

This stay is fitted the same as the fore.

The following examples will show the dimensions, &c. of the standing rigging.

Also the principal blocks, furniture of yards, and how they are fitted.

Every splice will be explained separately, also the different splices of standing furniture, such as foot ropes, stirrups, and jackstays.

In all ropes with eyes spliced in the ends, there is a good whippen put on, at a distance from the end of twice and a half the round of rope.

The dimensions required of the length of rope for the eye, will be from the whippen to the strand the marlinspike is first entered.

Length of rope for the eye, once the round of spar it is fitted for, and once the round of rope; the strands of the splice are put in one whole strand, and one half strand, the strands are then tapered down, and served with spunyarn.

TRUSS AND YARD ARM STRAPS, FOR BRACE BLOCKS.

The strands of the splices are put in one whole strand, and one half strand each way, and serves all over the strands.

STRAPS FOR BLOCKS.

The rope is set up and stretched, it is parcelled, tarred, and served.

For the length: put a chalk mark at the centre required to be married at, leaving sufficient end to splice with; that would be twice round the rope at one end, and once and a half at the other end.

The strands of the long end are put in twice, and the strands of the short end once.

The service is brought up close to the strands, the strands in wake of the block are cut off before the block is seized in. The other strands are whipped, and cut off after the block is seized in.

The given round of the blocks will be round the score, where the strap would lay in, and not athwart the head of the block.

FORE GIRTLINE BLOCKS.

15-Inch Block.

	Fthm.	Ft.	Inch
The length of the strap will be the round of the block - - - - -	0	2	9
It will take up once the round of the rope, for going round the block and to form the eye - - - - -	0	0	5

5-Inch Rope.

Length of strap from block, when fitted	0	1	3
The length to marry the strap will be -	0	4	5
Length of end to splice with - -	0	1	3
Length of rope required for one block -	0	5	8

FORE PENDANT BLOCKS.

These blocks are 24 inches, single thick, single scored, and strapped with 7½-in. rope.

Length the round of the block - -	0	4	6
The round of the thimble - - -	0	1	4
The seizing will take up - - -	0	0	6
The rope in going round the block, is two thirds the round of rope - - -	0	0	5
Length to marry the strap - - -	0	6	9
To splice the long end - - -	0	1	3
Ditto the short end - - -	0	0	10
Length of rope required for one block -	1	2	10

Seizing 1½ inch 5 fathoms.

FORE TACKLE BLOCKS.

22 inch, double thin, single scored, strapped with 6½ inch rope.

These blocks are fitted with a thimble, to lash to the short leg of the fore pendants.

Dimensions :

Once the round of block - - -	0	4	6
Once the round of thimble - - -	0	1	6
For the seizing - - - - -	0	0	6
And once the round of rope - -	0	0	6½
Length to marry the strap - - -	0	7	0½
Length of end to splice the long end -	0	1	1
Ditto ditto the short end -	0	0	9
Length of rope required for one block -	0	8	10½

Seizing 1½ inch 4½ fathoms.

FORE TACKLE BLOCKS.

Two in number.

The lower blocks are 22 inch, single thin, and single scored, strapped with 6½-inch rope, fitted with a long strap with a hook and thimbles, and a becket of 2½ inches spliced round the strap, for the standing part of foll to lead through.

The round of block will be - -	0	4	0
Length of strap from block 2 ft. × 2 -	0	4	0
Once the round of rope - - -	0	0	6½
Length to marry the strap - - -	0	8	6½
Length of ends to splice with - -	0	1	10
Length of rope required for one block -	0	10	4½

Seizing 1½ inch 4 fathoms for the block.

The thimbles are seized in with 1 inch 3½ fathoms.

FORE RUNNER TACKLE BLOCKS.

Two in number.

22 inch double thin, single scored, blocks strapped with a 6½-inch rope. These blocks are fitted with a short eye, sufficient to reeve a 7½-in. runner.

	Fthm.	Ft.	Inch
The round of the block is - - -	0	4	6
Length of strap, from the inside of the eye to the block, will be 9 in. × 2 -	0	1	6
The rope takes up in going round the block and forming the eye, once the round of rope - - - - -	0	0	6½
Length to marry the strap - - -	0	6	6½
Length of ends to splice with - -	0	1	10
Length of rope required for one block -	0	8	4½

Seizing 1½ inch 4¼ fathoms.

FORE RUNNERS.

7½in. rope, 19fathoms long each, one end spliced into the eye of the strap of the double block, the strands of the splice is put in once and a half, tapered, marled down, and served over.

Length of runner when fitted, would be twice the length of mast, from deck to upper part of trestletrees.

FORE RUNNER BLOCKS.

The lower blocks are 22in. single thin, fitted the same as the fore tackle blocks, and of the same length and dimensions.

FORE STAY TACKLE PENDANT.

7½in. rope, 7 fathoms, a hook is spliced at one end, and the other end spliced through the strap of the double block, the strands are put in once and a half, it is set up and served over the splices.

The length when fitted, will be three-fourths the length of mast from deck to lower side of trestletrees.

FORE STAY TACKLE BLOCKS.

	Fthm.	Ft.	Inch.
The upper block is an 18in. double block strapped with 5½in. rope; length, once the round of block - - - -	0	3	6
Length of strap from block, 8in. × 2 = -	0	1	4
And once the round of rope - -	0	0	5½
Length to marry the strap - - -	0	5	3½
And of the ends to splice with - -	0	1	7
Length of rope required - - -	1	0	10½

Seizing, 1 inch, 4 fathoms.

The lower block is an 18in. single block, strapped with 5½in. rope, fitted with a long strap, and a hook and thimble.

The length of the strap will be the round of the block. - - - - -	0	3	3
Length of strap from the block 1ft. 10in. × 2 = 3ft. 8in. + 3ft. 3in. = 6ft. 11in. -	0	3	8
And once the round of rope - -	0	0	5½
Length to marry the strap - - -	0	7	4½
Ends to splice with - - - -	0	1	7
Length of rope required - - -	0	8	11½

The block is seized in with 1 inch, 3¼ fathoms.

The thimble with ¾ inch, 3½ fathoms.

MAIN STAY TACKLE PENDANT AND BLOCKS,

Are of the same dimensions as the fore, the blocks and ropes being of the same size.

SPAN BETWEEN FORE AND MAIN STAY TACKLE PENDANTS

6½in. rope, 8 fathoms; an eye is spliced in one end to go over the strap of the double block of the forestay tackle, and stopped round the neck close to the seizing, and a hook and thimble spliced in the other end, to hook to a thimble strapped round the neck of the double block of the main stay tackle.

FORE STAY TACKLE FALL.

4inch rope, 49 fms. 2ft.; the length of fall is 4 times the extreme length of mast from the deck.

	Fm.	Ft.	Inch.
Length of mast from deck, 74ft. × 4=296ft.	49	2	0

MAIN STAY TACKLE FALL,

Is the same dimensions as the former.

FORE RUNNER TACKLE FALLS.

The length will be - - - -	49	2	0

That is four times the extreme length of mast from the deck.

FORE TACKLE FALLS.

4½in. rope, the length for each fall, four times the length of mast from the deck	49	2	0
And for stray rope - - - -	4	0	0
Length required for one fall - -	53	2	0

LEADING BLOCKS FOR FORE AND MAIN RUNNER TACKLES, AND FORE AND MAIN TACKLES.

Ten in number, 14-in. single thick blocks, strapped with 4½in. rope, lengths as follows:

The round of the block, is - - -	0	2	7
Round of thimble - - - -	0	1	2
Once the round of rope - - -	0	0	4½
The seizing will take 2½in. × 2=5in+ 4ft. 1½in.=4ft. 6½in. - - -	0	0	5
Length to marry the strap - - -	0	4	6½
Length of ends to splice with - -	0	1	3½
Length of rope required for one block -	0	5	10

Seizing ¼ inch, 3 fathoms.

MAIN PENDANT BLOCKS.

The same dimensions as the fore.

MAIN RUNNER TACKLE BLOCKS.

The same dimensions as the fore.

MAIN TACKLE BLOCKS.

The same dimensions as the fore; the blocks and strapping being the same size.

MAIN RUNNERS.
7½-Inch Block.

	Fthms	Ft.	Inch.
Twice the length of mast, from deck to upper part of trestletrees - -	21	1	4
That would be the length of rope when fitted.			
Half the eye end to splice with - -	0	1	8
Length of rope required for one runner -	21	3	0

MAIN RUNNER TACKLE FALL.
4½-Inch Rope.

Four times the length of mast, from head to the deck - - - - - -	54	4	0
And 5 fathoms stray rope - - -	5	0	0
Length of one fall - - - - -	59	4	0

MAIN TACKLE FALL.
4½-inch Rope.

Four times the length of mast, from head to the deck - - - - - -	54	4	0
And 4 fathoms stray rope - - -	4	0	0
Length of one fall - - - - -	58	4	0

FORE JEER BLOCK.

A double 24-inch block, double scored for the mast head, strapped with 9-inch rope, and is fitted with a double strap.

Length of strap from block, when fitted, will be once the round of mast head, 9ft. 6in. × 4 = 38ft. - - - -	6	2	0
And twice the round of block, 10ft. -	1	4	0
Twice and a half the round of rope -	0	1	10½

	Fthm.	Ft.	Inch.
Length to marry the strap - - -	8	1	10½
End to splice with, long end would be -	0	1	6
Short end would be - - - - -	0	1	1½
Length of rope required - - -	8	4	6

After the strap is spliced, and the service brought up close to the strands of the splice, cut the strands of that which would come in wake of the block.

The centre of the splice is nippered to the centre of the lower score at the back of the block, with a strand and a bolt, and the bight hove straight along. If on board the ship, use a tackle for it. If in the rigging-house, a rope's end brought to the windlass.

The two parts of the strap is hove to with a strand and bolts, close to the block, then put a spunyarn seizing on, to keep it in its place.

Mark the bight at the centre, and stop it to the centre of the upper score of the block, with the same strand and bolt as before; heave the two bights straight, and bring the two parts together as before.

If on board the ship, drive wedges between the seizing and the block, to set the strap close to the block. If in the rigging-house, the backs of the two blocks, that would be for the fore and main, are lashed together, through the sheave holes with a 5-inch lashing.

The strap of one block is lashed to a pendant that is round a post, and a purchase lashed to the bights of the strap of the other block, and the fall is brought to the windlass.

When the strap is set in close round the block, nipper the strap to the block with a strand and a bolt abreast of the pin, that will keep the strap tight round the block while preparing for seizing.

Hang the block up by the strap, and take off the spunyarn seizings.

Parcel each part of the strap in wake of the seizing, with strips of tarred canvass.

Put a toggle between the strap each way, above where the seizing will come, to keep sufficient room for the crossing turns.

Heave the strap to as before, and put a spunyarn stop on each two parts, above where the seizing will come.

Pass the strand round all four parts, and heave them close to the toggles; put a stop round all the parts, let it be square from the block at the distance required, the first turn of seizing from the block, which will be 8½in.

Size and length of seizing, 2 inches, 9 fathoms.

There are 8 lower turns, and 7 riding turns, with 5 crossing turns, two one way, and three the other.

MAIN JEER BLOCK

Is of the same dimensions (according to the length of mast,) and fitted the same manner as the fore.

FURNITURE FOR THE YARDS, AND HOW TO FIT IT.

FORE YARD.

Jeer blocks, two of 24 inches, single thick, double scored, strapped with 6-in. rope.

These blocks are strapped with 2 straps each, the long strap is two-thirds the round of the yard from block when fitted; the short leg one third, giving the long leg the advantage of a few inches.

What the seizing takes up will give sufficient drift for lashing.

	Fthm.	Ft.	Inch.
The round of the yard - - -	1	1	7
Length of the long strap from block when fitted, 5ft. 3in. × 2 = 10ft. 6in. - -	1	4	6
Once the round of block - - -	0	4	4
And once the round of rope - -	0	0	6
Length to marry the long strap - -	2	3	4

	Fthm.	Ft.	Inch.
Length of short strap from block when fitted, 2ft. 4in. × 4. - - -	0	4	8
Once the round of block - - -	0	4	4
Once the round of rope - - -	0	6	6
Length to marry the strap - - -	1	3	6

The two straps are seized round the block, the same as the upper block.

Seizing, 2 inches, 6½ fathoms.

TOPSAIL SHEET BLOCKS.

These blocks are called quarter blocks, they are 16in. single thick, double scored, and strapped with 5½in. rope, a double strap.

Seizing, 1¼inch, 5½ fathoms.

Dimensions as follows:—

The round of the yard is 7ft. 6in. × 2 = 15ft.	2	3	0
Twice the round of block - - -	0	5	10
And twice the round of rope - -	0	0	11
Length to marry the strap - - -	3	3	9
Length of long end to splice with -	0	0	11
Ditto short end ditto - -	0	0	8
Length of rope required for one block -	3	5	4

The block is seized in the two bights the same as the upper jeer blocks.

FORE TRUSS STRAPS.

Fitted with two straps of 5-inch rope, round a welded thimble, one long strap, and one short.

Length of long strap from thimble when fitted, 5ft. 2in. × 2 - - - -	1	4	4
Once the round of thimble - - -	0	1	5
And half the round of rope - - -	0	0	2½
Length to marry the strap - - -	1	5	11½

	Fthm.	Ft.	Inch.
Length of short strap from thimble when fitted, 2ft. 3in × 2	0	4	6
Once the round of thimble	0	1	5
And half the round of rope	0	0	2½
Length to marry the strap	1	0	1½
Length of end to splice with, will be twice the round of rope at each end, 10in, × 2	0	1	8
Length of rope for the short strap	1	2	9½

Let the splice be just clear of the seizing.

The splice of the long strap on the opposite side, about the centre.

The thimble is seized in the two straps with 1¼inch, 5 fathoms; it crosses only one way.

FORE TRUSS PENDANTS, LONG TRUSSES.

8-inch Rope.

For the lengths:

Once the round of the yard	1	1	6
Two thirds the round of mast	1	0	2
And from the yard to the block on the after part of trestletrees	1	4	0
The block in the lower part of pendant comes half way down the mast, from the trestletrees	4	3	6
For half the eye and splicing	0	2	4
And for making the flemish eye in the lower end	0	2	10
Length of rope required for one pendant	9	2	4

To fit them.

Splice an eye in one end; the length of the eye will be 11 lays of the rope, from the whipping to the strand a fid is first entered; after the fid is driven in, bend the eye up, and there will be 9 clear lays from the first strand that is entered.

The strands are put in once and a half, and then set up; they are then marled down, wormed, parcelled, tarred, and served 5 fathoms from the eye.

A long Flemish eye is made in the lower end, to seize a double 10-inch block in, after the yard is up, and the pendant rove through the block at the trestletrees.

FORE CLEWGARNET BLOCKS.

There are two 13-inch single blocks, strapped with 4½-inch rope.

	Fm.	Ft.	Inch.
Length: once the round of the yard -	1	1	3
And once the round of the block - -	0	2	5
Half the round of rope - - -	0	0	2¼
Length of the strap, after the eyes are spliced and served - - - -	1	3	10¼

The block is seized in the centre of the strap with 1 inch 3 fathoms.

Length of strap from the block, when fitted, will be 3 ft. 7½ in., that is half the round of yard.

What the seizing takes up will give sufficient drift for lashing the two eyes on the top of the yard.

FORE YARD JACKSTAYS.

For the length:

Take the extreme length of the yard, which will be sufficient to make it, say	15	1	0
Length of rope it will take for the eye, once the round of yard arm - -	0	3	5
Once the round of rope - - -	0	0	4
Length for the eye, from the whipping to the strand the marlinspike is first entered - - - - - -	0	3	9
Length of end to splice it with - -	0	0	8

	Fthm	Ft.	Inch.
Length for the eye and splicing - -	0	4	5
From yard arm cleat to centre of yard	6	5	8
Length for half the lashing eye and to splice it - - - - - -	0	1	0
Drift for setting it up would be 3 ft. that would be - - - - - -	7	5	1
1 ft. 6 in. each side of the centre— -	0	1	6
Length for one side - - -	7	3	6

To fit the jackstay: splice an eye in each end to go over the yard arm, then set it up and serve 39 ft. from each eye, cut it at the centre

The thimble must be spliced in the other ends, after it is rove through the eye bolts on the top of the yard.

FORE YARD FOOT ROPES.

5½in. Rope.

Length: once the extreme length of yard	15	1	0
And 1-12th will be - - - - -	1	1	7
Length of rope required for both sides -	16	2	7

To prove the lengths and to fit them:

Splice an eye in each end, to go over the yard.

Length for the eye:

Once the round of yard - - -	0	3	5
Once the round of rope - - -	0	0	5
Length of eye, from the whipping, to the first strand the marlinspike is entered	0	3	10
End to splice with - - - - -	0	0	11
Length for the eye and to splice with -	0	4	9

Cut it at the Centre.

After the stirrups are rove on, splice a thimble in the ends; the length it will take for half the thimble and to splice with, will be - - - - - -	0	1	9
From the yard arm cleat to the centre -	6	5	8

The drift of lashing will give sufficient droop below the yard.

The thimbles are spliced in the ends, after the stirrups are rove in.

FORE YARD STIRRUPS.

4-Inch Rope.

There are four on each side of the foot ropes.

To fit them: splice an eye in both ends of each, one eye to reeve on the foot rope and the other eye to go over an eye bolt on the yard.

	Fthm.	Ft.	Inch.
The length for the eye will be for half the eye and to splice with - -	0	1	2

For the length of stirrups, from eye to eye, see the following examples, as shown under their respective numbers.

	No. 1.		No. 2.		No. 3.		No. 4.	
	Ft.	In.	Ft.	In.	Ft.	In.	Ft.	In.
Length for yard, when fitted.	3	9	3	10	4	0	3	11
For half the eye to splice ...	2	4	2	4	2	4	2	4
Length required for one side..	6	1	6	2	6	4	6	3

FORE YARD TACKLE PENDANTS.

7½-inch Rope.

For the lengths, one-fourth the extreme length of the yard for each pendant.

Splice an eye in one end, to go over the yard arm.

Once the round of the yard - -	0	3	4
Once the round of rope - - -	0	0	6
End to splice with - - - -	0	1	3
Length required for the eye and splice -	0	5	1

The other end splices through the strap of a 28-inch longtackle block.

Sometimes the pendants are spliced round the block, which is quite as well, and saves the labour of strapping the block.

If the pendant is to be spliced round the block, allow 3 ft. more on each pendant; splice an eye 3 ft. long, and seize the block in with 1 in. $3\frac{1}{4}$ fathoms.

YARD TACKLE BLOCKS.

6-Inch Rope.

Two 28-in. longtackle blocks strapped with 6-in. rope

	Fthm.	Ft.	Inch.
For length, once round the block - -	0	4	11
Length of eye from block, 8 in. × 2 = 1 ft. 4 in.. - - - -	0	1	4
And once the round of rope - -	0	0	6
Length to marry the strap at - -	1	0	9
Length of ends to splice with - -	0	1	9
Rope required for one block - -	1	1	6

Seizing 1 inch $3\frac{1}{2}$ fathoms.

The lower block is two 18in. single thin, fitted with a long strap and an hook, and of the same dimensions as the stay tackle.

FORE BRACE BLOCKS.

There are two 26in. single thin, double scored blocks, strapped with $3\frac{1}{2}$in. rope, with a double strap, and the block is seized in the two bights, and a welded thimble with a common thimble rove through it for the yard arm strap.

Length for the strap, twice the round of block - - - - -	1	3	2
Twice the round of thimbles - -	0	3	0
Distance of the thimble from the block, 3in. × 4 = - - - - -	0	1	0
And twice the round of rope - -	0	0	7
Length to marry the strap at - -	2	1	9

Strap for the yard arm, 5¼inch rope.

	Fthm.	Ft.	Inch.
For the lengths, take once the round of the yard arm - - - - -	0	3	3
Once round the thimble - - -	0	1	4
Once and a half round the rope - -	0	0	8
Length to marry the strap - - -	0	5	3
For the splice - - - - -	0	1	10
Length of rope required for one strap -	1	1	1

FORE BRACE BLOCKS.

To go to the cheeks of the mainmast. These blocks are of the same dimensions as the yard arm blocks, only not a welded thimble; cut the strap one foot longer. The strap is only laid round the block till the ship is commissioned, when, if an opportunity occurs, fit these blocks to the eye bolts in the mast before it is steeped.

And the topsail braces also.

FORE LIFT BLOCKS.

There are two 16 in. single thick blocks, strapped with 6 in. rope.

For length once the round of the yard -	0	3	3
Once the round of block - - -	0	2	11
And once and a half the round of rope -	0	0	9
Length to marry the strap at - -	1	0	11
Length of ends to splice with - -	0	1	9
Rope required for one block - -	1	2	8

Outer Leachline Blocks.

Two of 8in. single, one each side, with a lashing eye.

Inner Leachline Blocks.

Two of 9 inches single, one each side, fitted with a lashing eye

Stabline Blocks.

Four of 8 inches, two on each side, fitted with tails, (they are single blocks.)

Bunt Stabline Block.

Once of 8 inches single, fitted with a tail.

Leading Blocks for the Leachlines.

Two of 9 inch, double.

Leading Blocks for Stablines.

Two 8 inch, double.

Buntline Blocks.

Four of 10 inch, single.

These blocks are fitted two in one strop, the lower part of one block is up, and the lower part of the other block is down, and a seizing between the two.

Leading blocks under the top, are double 11 inch 4 in number; these are fitted in the rigging house with tails, on board they are fitted with an eye to go up through the top, and are toggled.

FORE TOPSAIL YARD.

Dimensions for cutting and fitting the rigging and blocks :

Parrel, 7-Inch Rope.

The Parrel is fitted with two legs, one long and one short, with an eye in the ends of each.

	Fthm.	Ft.	Inch.
Length of the long leg, twice the round of the yard - - - - -	1	3	8
Two-thirds the round of topmast - -	0	3	8
Length from eye to eye, when fitted -	2	1	4
Length for half the eyes and to splice with	0	4	0
Length to cut the long leg - - -	2	5	4

Short leg.

	Fthm.	Ft.	Inch
Two-thirds the round of topmast -	0	3	8
For half the eyes and splicing them -	0	4	0
Length to cut the short leg - - -	1	1	8
Length of rope for the parrel - -	4	1	0

The short leg is seized at the centre of the long leg.

A seizing of 1 inch 3½ fathoms close to each eye of the short leg.

The hollow between the two parts is filled up with strands, and the two parts are marled together with spunyarn, and covered with leather; the long leg is covered with leather 3 ft. from the short leg, each way.

TOP GALLANT SHEET BLOCKS.

Two of 12-in. single, are fitted with two lashing eyes, strapped with 4-inch rope. For the lengths:

Once the round of the yard - - -	0	4	10
Once the round of the block - -	0	2	4
And half the round of rope - -	0	0	2
Length of strap, from eye to eye - -	1	1	4
For half the eye and splicing - -	0	3	0
Length for one block - - -	1	1	4

TOPSAIL CLEWLINE BLOCKS.

Two of 13 inches single, 4½-inch rope, fitted with lashing eyes.

For the lengths: once the round of yard	0	4	10
Once the round of block - - -	0	2	6½
And half the round of rope - - -	0	0	2½
Length of strap, from eye to eye - -	1	1	7
For half the eye and splicing - -	0	3	3
	1	4	10

Seize the block in the centre of the strap with 1 in. 2½ fathoms.

	Fthm.	Ft.	Inch.
Length of strap from block, when fitted that is half the round of the yard.	0	2	5

What it takes up in going round the yard and seizing, will give sufficient drift for lashing.

Some officers prefer a double block for the topsail clewlines and top-gallant sheets.

JACK STAY.

Will be of 3-inch rope. Length for the eye :

Once round the yard - - - -	0	2	8
Once the round of rope - - -	0	0	3
Length of rope for the eye - - -	0	2	11
Length of end to splice with - -	0	0	9
	0	3	8
From the fork of the eye to the thimble, when spliced - - - - -	4	1	7

That is 1 ft. 6in. less than the yard is, from yard arm to cleat, to the centre, and 1 ft. 6 in. on each; allow 3 ft. drift from thimble to thimble, for setting up.

Length for splicing the thimbles in -	0	1	0
Length of rope for one side - -	5	0	3
Multiply by two - - - -			2
That is 4 ft. 8 in. less than the extreme length of the yard - - - -	10	0	6

After the eyes are spliced for the yard arms, they are set up and served, 24 ft. each, from the eye.

The thimbles are not spliced in the other ends until the jackstay is rove through the eye bolts on the yard.

FOOT ROPES.

	Fthm.	Ft.	Inch.
For the lengths: once the extreme length of the yard - - - - -	10	5	0
And one fourth - - - - -	2	4	3
Length of rope for both sides - -	13	3	3

Splice an eye in one end to go over the yard arm, and serve it 3ft. from the eye; the eye in the other end is spliced after the stirrups are rove on.

To prove the length:—

Length for the eye, the round of the yard	0	2	8
Once the round of rope - - -	0	0	4
End to splice with - - - -	0	0	10
Length for the eye and splicing - -	0	3	10
From the yard arm cleat to the centre -	4	3	1
And from the centre to the opposite quarter, where the eye will lash - -	1	1	6
And for the droop below the yard -	0	1	0
Half the lashing of eye and splicing -	0	1	3
Length required for one side - -	6	4	8

STIRRUPS.

3-in. rope.

There are three rove on each foot rope.

There is an eye spliced in each end, one to reeve on the foot rope, and the other eye goes over the eye bolts on the yard.

The lengths for.....	No. 1	No. 2	No. 3
	Ft. In.	Ft. In.	Ft. In.
From eye to eye, when fitted.....	2 9	3 0	2 10½
For half the eyes and to splice with.....	2 6	2 6	2 6
	5 3	5 6	5 4

Length of rope required for one side. - 2 4 1½

FORE TOP SAIL BRACE BLOCKS.

There are four 18-in. single thin blocks, strapped with 3-in. rope; two for the yard, and two to go to an eye bolt in the cheeks of the main mast.

The two blocks for the yard are fitted with two single straps each, and two thimbles, one for the block, and one for the yard arm. Length as follows:

	Fthm.	Ft.	Inch.
Once the round of the block - -	0	0	3
Once the round of the thimble - -	0	1	0
Once the round of rope - - -	0	0	3
And for the seizing, $2\frac{1}{2}$in. $+2=5$in. -	0	0	5
Length to marry the strap - - -	0	4	11
And of the ends to splice with - -	0	1	0
Length of rope required for one strap -	0	5	11

THE LEADING BLOCKS.

3-in. Rope.

At the main mast, are strapped with a double strap.

Lengths as follows:

Twice the round of block - - -	1	0	6
Twice the round of the thimble - -	0	2	0
And twice the round of the rope - -	0	0	6
Drift for the seizing, 3in. $\times 4=1$ft. -	0	1	0
Length to marry the strap - - -	1	4	0
And for splicing - - - -	0	1	0
Length of rope required for one block -	1	5	0

YARD ARM STRAP.

5-in. Rope.

For the lengths; once the round of the yard	0	2	8
Once the round of the thimble - -	0	1	0
And twice the round of the rope - -	0	0	10
Length to marry the strap at - -	0	4	6
And the ends for splicing - - -	0	1	10
Length required for one strap - -	1	0	4

FORE TOPSAIL LIFT BLOCKS.

There are two 14in. single thick blocks, strapped with 5in. rope.

	Fthm.	Ft.	Inch.
For the lengths: once the round of the yard	0	2	7
Once the round of the block	0	2	8
And twice the round of the rope	0	0	10
Length to marry the strap	1	0	1
And of the ends to splice with	0	1	5½
Length required for one block	1	1	6½

The strap will fid out 2ft. 7in. Seizing 1in., 3¼ fms.

FLEMISH HORSES.

3-Inch Rope.

A thimble is spliced at one end to go over the goose neck at the yard arm, splice an eye in the other end to seize on the yard.

Dimensions :

Three times the length of yard arm, from the cleat	2	4	3
To prove the length :			
Half the thimble and splicing	0	1	3
Half the eye and splicing	0	1	0
From the goose neck to where the eye would be seized	2	1	5
Allow for the droop below the yard	0	0	9
Length of rope for one side	2	4	5

TOP SAIL TYE.

7½-Inch Rope.

For the length : four times the length of topmast, from hounds to lower cap.

Length of one tye	23	2	8

If the tye is spliced round the block, splice an eye in one end, 3 ft. long, and seize the block in it with 1¼ inch, 4 fathoms.

FORE TOPSAIL TYE AND BLOCKS.

If the fly block is strapped, splice the end of tye through the strap of the block.

One block is a 26-inch double thin, strapped with 5½-inch rope, of the following length:

	Fthm.	Ft.	Inch.
Once the round of block - - -	0	4	11½
Once the round of rope - - -	0	0	5½
And length of eye from the block 9 × 2 =	0	1	6
Length to marry the strap - - -	0	6	11
And of ends to splice it - - -	0	1	6
Length of rope required for one block -	0	8	5

Seizing, 1¼ inch 4 fathoms.

5½-Inch Rope.

The other tye block is a 26-inch single.

Length for the strap:

Once the round of block - - -	0	4	8
Once the round of rope - - -	0	0	5½
Of the eye from the block, 7 in. × 2 -	0	1	2
Length to marry the strap - - -	0	6	3½
Of the ends to splice with - - -	0	1	6
Length of rope required for one strap -	0	7	9½

Seizing, 1¼ inch 3½ fathoms.

LOWER BLOCKS, TO HOOK IN THE CHANNELS.

They are two 26-inch thin blocks, strapped with 5¼ inch rope, fitted with a long strap and a hook and thimble.

Lengths:

	Fthm.	Ft.	Inch.
Once the round of block - - -	0	4	8
Once the round of rope - - -	0	0	5½
Length of strap from block, when fitted, 2 ft. 2 in. × 2 - - - -	0	4	4
Length to marry the strap - - -	0	9	5½
For the ends to splice with - - -	0	1	6
Length of rope required for one block -	0	10	11½

Seizing for block 1½ in. 3½ fms., thimble 1 in. 3½ fms.

FORETOP TACKLE PENDANTS.

9-inch Rope.

For the length:

Twice the extreme length of topmast -	20	5	0
And 2 ft. for splicing the thimbles in -	0	2	0
Length required for one pendant - -	21	1	0

TOP TACKLE LEADING BLOCKS.

Two 15-inch single thick blocks, strapped with 5-in. rope, with a long strap to go over the hook of the lower block.

For the length of strap:

Once the round of block - - -	0	2	9
Once the round of rope - - -	0	0	5
Length of the strap from the block, when fitted, 1 ft. 2 in. × 2 - - -	0	2	4
Length to marry the strap - - -	0	5	6
Of the ends to splice with - - -	0	1	5½
Length of rope required for one block -	1	0	11½

FORE TOP GALLANT YARD.

Parrel, 3½-inch Rope

It is fitted with two straps, one long the other short, and a thimble in each.

For the length of the short strap, take

	Fthm.	Ft.	Inch.
Once the round of the yard - -	0	2	10
Once the round of thimble - - -	0	0	6
Two thirds the round of rope - -	0	0	2½
And drift for the seizing, 2 in. × 2 = -	0	0	4
Length to marry the strap - - -	0	3	10½
Of the ends to splice with - - -	0	1	0
Length of rope required for the short strap	0	4	10½

For the long strap:

Once the round of the yard - - -	0	2	10
Once the round of mast - - -	0	2	10½
And once the round of rope - -	0	0	3½
Length to marry the strap - - -	0	6	0
End to splice it with - - - -	0	1	0
Length of rope required for the long strap	0	7	0

The strand of the splice is put in once and a half each way, and served all over. There are two seizings for the long strap, one for the thimble, and one close to the yard.

TOP GALLANT CLEWLINE AND ROYAL SHEET BLOCKS.

Two 8-inch double blocks, strapped with 3-inch rope, fitted with two lashing eyes.

For the lengths:

Once the round of the block - -	0	1	7½
Once the round of the yard - -	0	2	10
And half the round of the rope - -	0	0	1½
Length from eye to eye - - -	0	4	7

FORE TOP GALLANT YARD.

Jackstay, 2-in rope

An eye is spliced at one end, to go over the yard arm, and a thimble at the other, to set it up in the centre of the yard.

For the lengths, as follows:

	Fthm.	Ft.	Inch.
Once the round of yard - - -	0	1	7
Once the round of rope - - -	0	0	1½
Length of end to splice with - -	0	0	6
The required length for the eye will be -	0	2	2½
One foot less than the yard is, from cleat to the centre - - - - -	3	0	0
Half the thimble and splicing - -	0	0	9
Length of rope required for one side -	3	2	11½
Once the extreme length of the yard will make the jackstays.			
Extreme length of the yard - -	6	5	6

FOOT ROPES.

Two in number, 3-inch rope.

An eye is spliced at one end of each, to go over the yard arm, and a lashing eye at the other ends, to seize on the opposite quarter of the yard, 5ft. from the centre.

For the lengths:

Once the extreme length of the yard -	6	5	6
And one third the length will be - -	2	1	10
Length of rope required for both - -	9	1	4
To prove the length:			
For the eye and splicing it - - -	0	2	4½
For splicing the lashing eye - -	0	0	9
And from the yard arm cleat, to where the eye is seized on is - - -	4	0	0
Allow 10 inches for droop below the yard	0	0	10
Length of rope required for one side -	4	3	11½

FORE TOP GALLANT YARD.

Brace Blocks.

Two in number of 8 single, strapped with 3in. rope, fitted with a long eye to go over the yard arm; for the lengths as follows:

	Fthm.	Ft.	Inch.
Once the round of the yard	0	1	7
Once the round of the block	0	1	6½
For the seizing, 1½in. × 2in.	0	0	3
And half the round of the rope	0	0	1½
Length to marry the strap	0	3	6
The ends for splicing	0	1	0
Length of rope required for one block	0	4	6

ROYAL YARD.

Parrel Rope,—2½in

It is fitted with two straps, one short and one long.

Short Strap.

Length as follows:

Once the round of the yard	0	1	6
Once the round of the thimble	0	0	4
Once the round of the rope	0	0	2½
Drift for seizing, 2in. × 2=4in.	0	0	4
Length to marry the short strap	0	2	4½
The end for splicing with	0	0	10
Length of rope required	0	3	2½

Long strap.

Once the round of the yard	0	1	6
Once the round of the mast	0	1	7
Once the round of the rope	0	0	2½
Length to marry the long strap	0	3	3½
The ends for splicing	0	0	10
Length of rope required	0	4	1½

FORE ROYAL YARD.

Clewline Blocks.

Two in number of 5in. single, strapped with 2in. rope fitted with two lashing eyes; the lengths as follows:

	Fthm.	Ft.	Inch.
Once the round of the yard - -	0	1	6
Once round of the block - - -	0	0	11½
And half the round of the rope - -	0	0	1
From eye to eye - - - -	0	2	6½
For the ends to splice with - - -	0	1	0
Length of rope required for one block -	0	3	6½

JACKSTAY.

1½in. Rope.

An eye is spliced in one end of each, to go over the yard arms, and a thimble spliced in the other ends to set up at the centre of the yard.

For the length:

Once the extreme length of the yard -	4	5	6
To prove it:			
Once the round of the yard. - -	0	1	0
Once the round of the rope - -	0	0	2
Length of end to splice it with - -	0	0	5
Half the thimble and splicing - -	0	0	9
From the fork of the eye to the thimble, is one foot less than the yard is from the cleat to centre - - - - -	2	0	6
Length of rope required for one side -	2	2	10
Multiply by 2 - - - - - -			2
Length of rope required for both sides -	4	5	8

Foot Ropes.

Two in number, of 2in. rope.

Length, once the extreme of the yard -	4	5	6
And one third - - - - -	1	3	10
Length required for both foot ropes -	6	3	4

Splice an eye in one end of each, to go over the yard arms, and a lashing eye in the other ends to seize to the opposite quarter of the yard, 3ft. 10in. from the centre.

To prove the length from eye to eye:

	Fthm.	Ft.	Inch.
Once the round of yard - - -	0	1	0
Once the round of rope - - -	0	0	2
Length of the end to splice with - -	0	0	6
Half the lashing eye and to splice it .	0	0	9
From yard arm cleat to the opposite quarter, where the eye will seize - -	2	5	4
Allow for the droop below the yard -	0	0	9
Length of rope required for one side -	3	2	6
Multiplied by two - - - -			2
Length required for both sides - -	6	5	0

Here is a gain of 1ft. 4in. but the rope will stretch more than that.

There is no deduction from any of the lengths from the yard gear for stretching, but it will be found, that after the gear is cut from the coil, it is not properly stretched, but merely hauled hand tight, and served over the splices. All new rope drawn from the store, will stretch from 5 to 6 inches in the fathom.

MAIN YARD.

Take the same dimensions for all the furniture as the fore, what the yard is more in length, and in circumference, allow it to the rope.

Preventer Brace Blocks.

These are two in number of 18in. single thin, double scored blocks, strapped with 3in. rope, fitted with a double strap, and a welded thimble, with a thimble rove through it for the yard arm strap.

	Fthm.	Ft.	Inch.
For the length:			
Twice the round of the block - -	1	0	7
Twice the round of the thimble - -	0	2	4
When fitted, the distance between the thimble and block for the seizing, 3in. × 4in. = - - - - - -	0	1	0
Length to marry the strap - - -	1	4	5
And of the ends to splice with - -	0	1	0
Length required for one strap .- -	1	5	5

Strap for the Yard. 4in. Rope.

It is fitted with two lashing eyes.			
For the length, once the round of the yard	0	3	10
Once the round of the thimble - -	0	1	0
And two-thirds the round of the rope -	0	0	3
Length from eye to eye - - -	0	5	1
And of ends to splice the eyes with -	0	2	0
Rope required for one strap - -	1	1	1
This strap is seized in at the thirds, viz:			
Long leg from the thimble to the back of the eye - - - - - -	0	2	8
The short leg will be - - - -	0	1	2
Length required - - - -	0	3	10

What the seizing takes up, and the strap is going round the yard, will give sufficient drift for lashing the eyes.

MAIN TOPSAIL YARD

The rigging and blocks are fitted the same as the fore, and by the same scale; what the yard is more in length and circumference allow it to the rope.

TOP GALLANT AND ROYAL YARD.

Fitted by the same scale as the fore: what the yard is more in length and circumference allow it to the rope.

CROSS JACK YARD.

Topsail Sheet Blocks.

Single 12-inch, two in number, strapped with 3¼-in. rope, fitted with two lashing eyes.

For the lengths, as follows:

	Fthm.	Ft.	Inch.
Once the round of yard - - -	0	4	6
Once the round of the block - -	0	2	4
Half the round of rope - - -	0	0	2
Length of strap, from eye to eye - -	1	1	0
And of the ends to splice with - -	0	2	0
Rope required for one block - -	1	3	0

Truss straps.

Are fitted the same as the fore.

Foot Ropes, 4-in rope.

Of the same dimensions as the fore.

Stirrups, 3-in. rope.

Two on each side of the yard.

Length to cut them will be - - -	1	1	0

An eye is spliced in one end of each to reeve on the foot ropes.

The other end is plaited to nail round the yard.

Cross Jackyard Jackstay.

There is none allowed, but it would be much safer to have one, for the men to take hold of when going out to the yard arm.

A 2½ in. jackstay would be sufficient.

CROSS JACK BRACE BLOCKS.

Two in number, of single 10-inch, strapped with 3½-inch rope, fitted with two thimbles, one rove through the other, for the yard arm strap.

For the lengths, as follows:

	Fthm.	Ft.	Inch.
Once the round of the block - -	0	2	0½
Once the round of the thimble - -	0	0	10
Once the round of rope - - -	0	0	3½
Drift for the seizing, 2 in. + 2 = -	0	0	4
Length to marry the strap - - -	0	3	6
And for ends to splice with - -	0	1	0
Length of rope required for one block -	0	4	6

STRAP FOR THE YARD.

3½-Inch Rope.

Lengths:

Once the round of the yard - -	0	2	6
Once the round of the thimble - -	0	0	10
And twice the round of the rope - -	0	0	7
Length to marry the strap - - -	0	3	11
And of the ends to splice with - -	0	1	2
Rope required for one strap - - -	0	5	1

The strands of the splice are put in once and a half each way, and are served all over the splice.

MIZEN TOPSAIL YARD.

Topsail Clewlines and Top Gallant Sheet Blocks.

Two double 8-inch blocks, strapped with 3-inch rope fitted with two lashing eyes.

Lengths as follows:

Once the round of the yard - - -	0	3	10
Once the round of the block - -	0	1	8
And half the round of the rope - -	0	0	1½
Length from eye to eye - - -	0	5	7½
For half the eyes and splicing - -	0	1	6
Length required for one block - -	0	7	1½

Parrel Rope, 4 inches.

It is fitted the same as the fore, and of the same dimensions to size of spar and rope.

Jackstay, 2½-in. Rope.

It is fitted the same as the fore, and of the same dimensions according to the spar.

Foot Ropes, 3-in. Rope

For the lengths:

	Fthm.	Ft.	Inch.
Once the extreme length of the yard -	8	3	6
And one-fourth the length - - -	2	0	10½
Length of rope required for both sides -	10	4	4½
To prove it;			
For the eye, once the round of the yard -	0	2	1
And once the round of the rope - -	0	0	3
And of the end to splice with - -	0	0	9
Half the lashing eye and splicing it -	0	1	0
From the yard arm cleat to 5ft. 10in. on the opposite quarter where the eye would lash - - - - - -	4	3	4
Allow for the droop below the yard -	0	0	10
Length required for one side - -	5	2	3

Stirrups for the foot ropes, 2½in. Rope.

There are two on each side the foot ropes. An eye is spliced in each end, and one to reeve on the foot rope, and the other to go over the eye bolts in the yard.

For the lengths	No. 1		No. 2	
	Ft.	In.	Ft.	In.
From eye to eye	2	1	2	3
For half the eye and splicing	2	6	2	6
Length of ropes required for one side	4	7	4	9

Parrel Rope, 4 inches.

It is fitted the same as the fore, and of the same dimensions to size of spar and rope.

Jackstay, 2½-in. Rope.

It is fitted the same as the fore, and of the same dimensions according to the spar.

Foot Ropes, 3-in. Rope

For the lengths:

	Fthm.	Ft.	Inch.
Once the extreme length of the yard -	8	3	6
And one-fourth the length - - -	2	0	10½
Length of rope required for both sides -	10	4	4½

To prove it;

For the eye, once the round of the yard -	0	2	1
And once the round of the rope - -	0	0	3
And of the end to splice with - -	0	0	9
Half the lashing eye and splicing it -	0	1	0
From the yard arm cleat to 5ft. 10in. on the opposite quarter where the eye would lash - - - - -	4	3	4
Allow for the droop below the yard -	0	0	10
Length required for one side - -			3

Stirrups for the foot ropes, 2½in. Rop

There are two on each side the foot r ye

each end and a reeve o e,

Splits in

2

In-

3

6

9

Flemish Horse, 2½-in. rope.

One end is spliced round a thimble, through an eye bolt on the yard arm, and a lashing eye at the other end to seize on the yard, 6ft. inside of the cleat.

For the length:

	Fthm.	Ft.	Inch.
Three times the length of the yard arm from the cleat - - - -	2	0	9
To prove the length:			
For half the thimble and splicing it -	0	1	0
For half the lashing eye, and for the splice	0	0	9
From the eye bolt at the yard arm, to 6ft. inside of the cleat, where the eye would be seized on - - - - -	1	4	3
Allow for the droop - - - -	0	0	9
Length for one side - - - -	2	0	9

Topsail Brace Blocks.

There are two 8in. single blocks, strapped with 3in. rope, fitted with two thimbles, one rove through the other, for the yard arm strap.

Lengths, once round the block - -	0	1	6½
Once the round of thimble - - -	0	0	7
Half the round of the rope - - -	0	0	1½
Drift for the seizing, 2in. × 2 = 4 inches -	0	0	4
Length to marry the strap - - -	0	2	7
And of the ends to splice with - -	0	1	0
Length of rope required for one block -	0	3	7

Strap for the Yard, 3in. Rope.

For the lengths:

Once the round of the yard - -	0	2	1
Once the round of the thimble - -	0	0	7
Two-thirds the round of the rope -	0	0	2
And drift for the seizing, 2ft. × 2 = 4 in.	0	0	4

	Fthm.	Ft.	Inch
Length to marry the strap - - -	0	3	2
And of ends to splice with - - -	0	1	0
Rope required for one strap - -	0	4	2

The strands of the splice are put in once and a half, and served all over the splice.

That strap will fid out 2ft. 1in.

TOP GALLANT YARD.

This yard is fitted by the same scale as the fore, only no brace block is on the yard. What the yard is less in length and circumference, deduct from the rope.

ROYAL YARD.

Fitted by the same scale as the fore; what the yard is less in length and circumference deduct from the rope.

The scale given for the yards of the foremast, will apply to any class of ships, according to the size of the yards, blocks, thimbles, and rope.

The dimensions of the furniture of all the yards having been given, now will follow the lengths of the different lifts and braces, from the drawings, or by scale.

Fore Braces.

Dimensions for the length, by scale:

Once the length of yard, from cleat to cleat	13	5	4
From foremast to after part of mainmast	30	4	6
And from main trestletrees to deck -	10	2	0
Allow for stray rope - - - -	10	0	0
Length of one brace - - - -	64	5	10

Dimensions of the lengths, from the drawings:

From the weather yard arm cleat, braced sharp up to the leading block at the mainmast-head - - - -	44	3	0
From trestletrees to deck - - -	10	2	0
Allow for stray rope - - - -	10	0	0
Length of one brace - - - -	64	5	0

FORE TOPSAIL LIFTS.

4½-In. Ropes.

Lengths:	Fthm.	Ft.	Inch
The yard is on the cap; from top mast head to yard arm cleat - - -	7	2	0
And 9 feet for making it fast round the mast head - - - - -	1	3	0
From yard arm to sister block - -	6	4	0
And from ditto to channels - - -	18	2	0
Allow 2½ fathoms for stray rope - -	2	3	0
Length of one lift - - - -	36	2	0

MAIN TOPSAIL BRACES.

4-in. rope.

Lengths, &c.			
From the weather yard arm cleat, to mizen topmast head - - -	16	4	0
From ditto to after part of mizen channels	16	0	0
And from yard arm to one-third down the mizen mast - - - - -	21	1	0
From ditto to deck - - - -	5	4	0
Allow for stray rope - - - -	5	0	0
Length of one brace - - - -	64	3	0

MAIN TOPSAIL LIFTS.

4½-inch Rope.

Lengths:			
From hounds of topmast to yard arm cleat	8	3	0
And 9 feet for making it fast round the mast head - - - - -	1	3	0
From yard arm to the sister block -	7	5	0
And from ditto to the channels - -	20	2	0
Allow 2½ fathoms for stray rope - -	2	3	0
Length of one lift - - - -	40	4	0

MIZEN TOPSAIL BRACES.

2½ inch Rope.

Lengths:	Fthm.	Ft	Inch
From yard arm cleat to main mast head	30	2	0
And from ditto to deck - - -	13	2	0
Allow 18 feet for stray rope - -	3	0	0
Length of one brace - - - -	46	4	0

MIZEN TOPSAIL LIFTS.

3½-inch Rope.

Lengths:			
From yard arm to the sister block -	6	1	0
And from ditto to top - -	7	1	0
For the eye and splicing it - - -	0	3	0
Allow 7 feet for stray rope - - -	1	1	0
Length of one lift - - - -	15	0	0

FORE TOP GALLANT BRACES.

2½-Inch Rope.

Lengths:			
From the weather yard arm cleat, to the fork of the collar of the main topmast stay 108 ft. × 2 = 216 - - -	36	0	0
From ditto to the eyes of the fore rigging	17	2	0
And from ditto to the deck - - -	9	4	0
Allow 6 fathoms for stray rope - -	6	0	0
Length of one brace - - - -	69	0	0

FORE TOP GALLANT LIFTS.

3½-inch Rope.

Lengths:			
From the top-gallant mast head, to the top, 82 ft. × 2 = 164 feet.			
Length of one lift - - - -	27	2	0

MAIN TOP GALLANT BRACES.

2½-inch Rope.

Lengths:	Fthm.	Ft.	Inch
From the weather yard arm to the collar of the mizen topmast stay - -	18	0	0
And from the yard arm to the leading block, on the foremast shroud of the mizen topmast rigging - - -	17	1	0
From ditto to deck - - - -	15	4	0
Allow 6 fathom for stray rope - -	6	0	0
Length of one brace - - - -	56	5	0

MAIN TOP GALLANT LIFTS.

3½-inch Rope.

Lengths:

From the top-gallant mast head to top is 92 ft. 6 in. × 2 = 185 ft.

Length of one lift - - - -	30	5	0

MIZEN TOP GALLANT BRACES.

2-in. Rope.

Lengths:

From the lee yard arm to the leading block on the main topmast backstay - -	13	5	0
And from ditto to deck - - -	17	5	0
Allow 4 fathoms for stray rope - -	4	0	0
Length of one brace - - - -	35	4	0

MIZEN TOP GALLANT LIFTS.

2½-inch Rope.

Lengths from the top-gallant mast head to the top, 66 ft. × 2 = 132 ft.

Length of one lift - - - -	22	0	0

FORE ROYAL BRACES.

2-in. Rope.

Lengths:

	Fthm.	Ft.	Inch.
From weather yard arm, to main top-gallant shroud - - - -	17	2	0
From ditto to after fore topmast shroud	17	1	0
And from ditto to deck - - -	17	4	0
Allow 4 fathoms for stray rope - -	4	0	0
Length of one brace - - - -	56	1	0

FORE ROYAL LIFTS.

2½-inch Rope.

For lengths, &c.

From the royal mast head to the topmast crosstrees 47 ft. × 2 = 94 ft. - -	15	4	0
And from ditto to top - - -	9	0	0
Allow 10 feet for stray rope - -	1	4	0
Length of one lift - - - -	26	2	0

MAIN ROYAL BRACES.

2-inch Rope.

Lengths:

From the weather yard arm to the mizen top gallant mast head - - -	18	0	0
And from ditto to deck - - -	20	0	0
Allow 4 fathom for stray rope - -	4	0	0
Length of one brace - - - -	42	0	0

MAIN ROYAL LIFTS.

2½-In. Rope.

For the lengths:

From the royal mast head to topmast crosstrees 52 ft. 6 in. × 2 = 105 ft. -	17	3	0
And from ditto to top - - -	10	0	0
Allow 10 feet for stray rope - -	1	4	0
Length of one lift - - - -	29	1	0

MIZEN ROYAL BRACES.

1½-Inch Rope.

Lengths:

	Fthm.	Ft.	Inch
From the lee yard arm to the hounds of main topmast head	13	0	6
From ditto to the deck	20	3	0
Allow 3 fathom for stray rope	3	0	0
Length of one brace	36	3	6

MIZEN ROYAL LIFTS.

2-in. Rope.

Lengths;

From the royal mast head to the topmast crosstrees	13	1	0
From ditto to top	7	0	3
Allow for stray rope	1	0	0
Length for one lift	21	1	3

SPANKER BOOM TOPPING LIFTS.

5-in. rope.

For the lengths:

Twice and a half the length of mizen mast from deck to lower side of trestletrees	21	5	8

Which will be length of one topping lift.

One end is spliced through the strap of a 13in. long tackle block, and after the other end is rove through the clump block at the mast head, it will be spliced round a thimble, through an eye bolt on the boom.

CLUMP BLOCKS.

Two in number, of 11 inches, strapped with 5½in. rope.

Lengths as follows:

Once the round of block	0	2	1
Length of strap from block 1ft. 2in. × 2 =	0	2	4
And two-thirds the round of rope	0	0	4
Length to marry the strap	0	4	9
And of the ends to splice with	0	1	8
Length to cut the strap	1	0	5

SPANKER BOOM TOPPING LIFT TACKLE.

There are two 13-in. long tackle blocks, strapped with 3-in. rope, fitted with an eye sufficiently large enough to reeve a 5½-inch rope.

For the lengths:

	Fthm.	Ft.	Inch.
Once the round of the block - - -	0	2	4½
Length of strap from block when fitted, 6in + 2	0	1	0
And two thirds the round of rope -	0	0	2
Length to marry the strap - - -	0	3	6½

Sometimes these blocks are fitted with hooks, and a thimble in the end of the topping lift to hook it to.

SINGLE BLOCKS.

Two in number of 8 inches, strapped with 3-in. rope, fitted with hooks and thimbles.

For the lengths:

Once the round of block - - -	0	1	6½
And once the round of thimble - -	0	0	6
Two-thirds the round of rope - -	0	0	2
Drift for the seizing, 1½in. × 2 = - -	0	0	3
Length to marry the strap - - -	0	2	5½

SPANKER BOOM SHEET BLOCKS.

Two of 11 inch double blocks, and six 11 inch single blocks.

The straps of these blocks are not spliced until they rig the ship, as they would be spliced through eye bolts in the boom, and on the quarter of the ship.

The straps may be cut out and placed round the block, with the seizing wrapped round it; allowing the thimble to be in the round 10 inches.

THE DOUBLE BLOCKS

Are strapped with 4in. rope.

For the lengths:

	Fthm.	Ft.	Inch.
Once the round of block - - -	0	2	2
Once the round of thimble - - -	0	0	10
Two-thirds the round of rope - -	0	0	3
Drift for the seizing 2½ in. × 2 = -	0	0	5
Length to marry the strap - - -	0	3	8
Allow sufficient ends for splicing - -	0	1	6
Length to cut the strap at - - -	0	5	2

THE SINGLE BLOCKS

Are strapped with 3¼-in. rope.

For the lengths:

Once the round of block - - -	0	2	0½
Once the round of thimble - -	0	0	8
And two-thirds the round of rope -	0	0	2½
Drift for the seizing, 2 in. × 2 = -	0	0	4
Length to marry the strap at - -	0	3	3
Ends for splicing with - - -	0	1	6
Length to cut the strap at - - -	0	4	9

SPANKER BRAIL BLOCKS.

Peak Outer.

Two in number of 7 in. single, fitted with seizing straps, there is a span spliced through the eye of the strap. The length when fitted will be

Two-thirds the round of the gaff where it would be lashed on, that is - - 0 2 2

Middle.

Two in number, of 7 in. double, fitted the same way.

Length of span - - - - - 0 2 8

Inner.

Two in number, of 7 in. double, fitted the same way.

Length of span - - - - 0 3 8

FISH TACKLE BLOCKS.

There are four 16 in. double blocks, double scored 5-in. rope. Two of them fitted with fish hooks, and two for the davits.

There are two single 16 in. blocks, double scored, for the leading blocks at the davits.

Blocks with Fish Hooks.

For the length of strap:

	Fthm.	Ft.	Inch
Once the round of the block, 3 ft. 5 in × 2	1	0	10
Length of strap from block, 2 ft. × 4 -	1	2	0
And three times the round of rope, 5in. × 3	0	1	3
Length to marry the strap at - -	2	4	1
Ends for to splice with - - -	0	1	6
Length to cut the strap at - - -	2	5	7

Double Blocks for the Davit.

For the lengths:

Once the round of block, 3 ft. 5 in. × 2=	1	0	10
Once the round of davit, 3 ft. 6 in. × 2=	1	1	0
Allow 3 inches on each part for going on easy - - - - - -	0	0	6
Drift for the seizing, 5 in. × 4 - =	0	1	8
And twice the round of rope - -	0	0	10
Length to marry the strap at - -	2	4	10
Ends to splice with - - - -	0	1	6
Length to cut the strap - - -	3	0	4

Leading Blocks.

For the length of strap, as follows:

Once the round of block. 2ft. 11in. × 2=	0	5	10
Once the round of davit, 3ft. 6in. × 2=	1	1	0
Allow for going on easy 3in. × 2=	0	0	6
Drift for the seizing, 3 in. × 4= - -	0	1	0
And twice the round of the rope - -	0	0	8
Length to marry the strap at - -	2	3	0

GUNNER'S BLOCKS.

These blocks are strapped with grummit straps, made from ¼ worn rope.

Double block of 10 inches, 3¼-inch rope.

	Fthm.	Ft.	Inch
Length of rope for three blocks - -	2	0	0
When the strands are unlaid marry them at	0	3	7

Knot the whole of the strand, and tuck two-thirds of it.

One half of these blocks have a becket at the lower part, for the standing part of the fall.

Peckets, ¾-in. Rope.

Length for three - - - -	1	0	9
Length to marry the strands at - -	0	2	6

Allowing the thimble to be 8 inches in the round, (but the thimbles are not all of the same size.)

What the thimble may be less than 8, deduct from the strand.

Double Blocks of 8 inches, strapped with 3-in. Rope.

Length for three - - - -	1	3	6
Length to marry the strand at - -	0	2	8
Round of thimble - - - -	0	0	6

Peckets, ½-inch Rope.

Length to cut for three - - -	1	0	0
When unlaid, marry the strand at -	0	2	0

Double Blocks, 6½ inch, 2½-in. Rope.

Length for three - - - -	1	2	6
When unlaid, marry the strand at -	0	2	5

Single Blocks, 6½ inch, 2½-inch Rope.

Length for three - - - -	1	2	0
Length to marry the strand at - -	0	2	2

Peckets, ½ inch

Length to cut for three - - -	0	5	6
When unlaid, marry the strands at -	0	1	8

LUFF TACKLE BLOCKS.

There are eight 12 inch double and single blocks, and four 13 inch double and single blocks.

The 12 inch blocks are strapped with 4½-inch rope.

Double Blocks, 12 inches.

For the length of strap:

	Fthm.	Ft.	Inch.
Once the round of block	0	2	5½
Once the round of the thimble	0	1	1
Drift for the seizing, 2½in. × 2 =	0	0	5
And two-thirds the round of rope	0	0	3
Length to marry the strap at	0	4	2½
Of the ends for splicing	0	1	4
Length of rope required for one block	0	5	6½

Single Blocks, 12 inch.

For the length of strap:

Once the round of the block	0	2	2½
Once the round of the thimble	0	1	1
Drift for the seizing, 2½in. × 2 =	0	0	5
And two-thirds the round of the rope	0	0	3
Length to marry the strap at	0	3	11½
And of the ends to splice with	0	1	4
Length of rope required for one block	0	5	3½

Double Blocks, 13 inch, 5-in. Rope

For the lengths:

Once the round of the block	0	2	8½
Once the round of the thimble	0	1	1
Drift for the seizing, 2½in. × 2 =	0	10	5
And once the round of the rope	0	0	5
Length to marry the strap at	0	4	7½
And of the ends for splicing	0	1	6
Length of rope for one block	1	0	1½

Single Block, 13 inch, strapped with 5-in. Rope.

For the lengths:

	Fthm.	Ft.	Inch.
Once the round of the block - -	0	2	5½
Once the round of the thimble - -	0	1	1
Drift for the seizing, 2½in. ×2= - -	0	0	5
And two-thirds the round of the rope -	0	0	3½
Length to marry the strap at - -	0	4	3
And of the ends to splice with - -	0	1	6
Length of rope required for one block -	0	5	9

REMARKS.

The dimensions of the straps, &c., for the principal blocks in the ship, are thus far shown, but there are many other blocks fitting with lashing eye, whose lengths can be ascertained as follows:—

Three times the length of the block; taking the left hand figure for feet, and the right for inches, will be the length to marry the strap at, and four times will be the length to cut, from a 7-inch block, up to a 16-inch single.

Seven-inch block, 7 in. × 3=2 ft. 1 in. 7 in. × 4= 2 ft. 8 in.

It is said that three times the length of the block would strap it, but it wants explanation.

If the blocks are to be fitted with thimbles, it will take a few inches more, which will be seen in the tables at the end of the work.

RIGGING A PAIR OF SHEARS ON BOARD TO PUT THE MAST IN.

If the ship is in dock.

The shears may be got through the bow port, with a pair of small shears over the bows, and transported aft, or parbuckled over the side, by placing spars from dock side to gunwale, hammock nettings being chocked and shored up with spars from netting to skids, to slide them on deck.

If the ship is at her moorings, and the shears in the water alongside with their heads aft, to parbuckle them on board.

Hang long spars over the side for fenders, hammock nettings being chocked and shored up; place two spars to project over the hammock rail, one each end of waist netting, with their heels secured to ring bolts on main deck, and lash them to the skids. Put a block on, or lash one to the head of each. A 6-inch hawser on the main deck, hand both ends up, one forward and one aft, reeve them through the blocks on spars from out, in, and through leading block on opposite side of the deck, haul as much through as is wanted for the men to haul on, or to take to the capstan. Overhaul the bights down, put them under one of the spars, make the standing part fast on main deck. Pass two slip ropes out of main deck port round the sheer to ease it over the netting, man the parbuckle, hoist the spar up to the netting, take in slack of slip ropes, haul on the parbuckle, ease the spar on deck with the slip ropes, transport it aft, put the head on the taffrail. Get the other spars on board the same way. Get two spars on board for a pair of small sheers, the same way, these are to assist in raising the large sheers.

To lash the shear heads.

Place the heads, one on the top of the other, and lash them with 4½-in. rope 30 fathoms, pass the lashing on both ends, commencing at the centre, and work both ways, put on 10 turns and ride them with 9 turns, work both ends towards the centre, and reef knot the ends, spread the heels open and place them over the shoes or steps, and lash the steps or shoes to the heels.

Purchase blocks.

If not provided from the rigging house, use those on board, strap the creaning blocks, of which one is a 30-inch four-fold block, the other a 30-inch three-fold block, they will do for a large purchase, strap them with 10 inch rope.

Small purchase.

Take hanging jeer blocks out of strap, and strap them with a short strap.

Topping lift.

Take fish tackle davit head blocks.

Lashing main purchase block.

Lash it on the foreside of shear head, with 5-inch rope 40 fathoms, work on both ends, pass the lashing bight and bight, one bight over starboard shear head, the other over port shear, so continue till sufficient turns are passed.

Lashing small purchase block.

This block lashes on the after side of the shears, with 5-inch rope 50 fathoms. This lashing is passed the same as the other, allowing the block to hang below just clear of the other.

Shear head guys.

Take two 8-inch hawsers, make a close hitch at the centre of each, put it over the shear head, take the two ends of one forward, and the two ends of the other aft, and after the shears are raised, put a luff tackle on each.

Belly guys.

Lash the fore and main runner blocks, one on the fore and one on the after side of each shear, nearly half way down, reeve the runner through them, take one forward, and one half each side, and make them fast.

Girtlines.

Put one girtline on each sheer head.

Small purchase.

Reeve the fall, and take the lower block forward, and lash it round a beam, lead the fall through a snatch block to fore capstan.

Heel tackles.

Lash the fore and main tackles on the heel of each shear, one forward and one aft, hook the single block to a lashing through the ports or some secure place, haul them well tight, and secure them, put a good lashing on the heel of shears, from aft, to keep the heels from slipping forward.

Raise the shears.

Man fore and main capstans, when the head is as high as small shears will top them, haul the main capstan, and take the fall of, and unlash the blocks from their heads, heave round fore capstan and top the shears up, attend the guys high enough the shears want to go a little aft, man the after heel tackle and guys and place the shears to plum the mast hole, haul the guys well tight, put a good frapping on the heels, from one shear to the other (a luff tackle would do), nail cleats above it to prevent its slipping up, pass a lashing round the shears legs, through the ports if convenient, if not, pass it through ring bolts.

Shoes for sheers to step in.

Nail cleats on heel of shears to keep the lashing up ; for lashing take 10 fathoms of 3-inch rope, pass a round turn round the heel, reeve the ends through eye bolts in fore part of shoe, one each side, pass as many turns as the eye bolt will admit, pass another lashing on the after part the same way, put a good lashing on the shear leg 8-feet from the deck to ring bolts in the ship's side: to prevent the heel from raising let it be well cleated up, lower small shears down.

the deck, haul them well tight and secure them; transport the shears forward, put a good lashing on the heels from forward, drop the shears over the bows, haul the after guys and mast head purchase well tight and secure them.

Heel tackle.

Lash the double block of a luff tackle round the stem close to the figure, the single block would be lashed to heel of bowsprit when high enough to enter the hole.

Slinging the bowsprit.

A pair of 8-inch slings. Take a round turn round the bowsprit, bring the two parts on top, lash the two parts together close to the bowsprit, put the two bights through strap of purchase block and toggle it, take the fall to the capstan. (These slings are put on 4 fathoms from the heel). Bowsprit will house 3ft., 3ft. 6in. from knight head to step. It may be as well to lash the purchase block in lieu of slings.

Topping lift.

Put a pair of 5-inch slings round the bowsprit inside of the bees, and through hole in the cap, and lash or toggle topping lift to it, take the fall to the capstan.

Put a man rope on each side of cap, and a heel rope on the bowsprit through one of the ports, heave round both capstans, when the bowsprit is high enough, enter the heel in the hole, walk back purchase and topping lift as required, put a tackle on each man rope and haul the bowsprit into the step. Unreeve the purchase and topping lift falls, take the shears down, transport the heels aft. Place a piece of timber athwart fore part of forecastle from one netting to the other, shore up the centre part, lower the mast head purchase, land the head of shears on the timber, and unrig them, send them over the side by the mast head purchase.

To send the Trestletrees up.

Lash three more girtlines to each mast head, one on each side, and a small one on the after part, to send the men and their tools up.

One girtline each side of mast for trestletrees, take a clove hitch with the end of the girtline round the score where the crosstree ships in; take a clove hitch with the same end round the other score, and bowline knot the end to the stranging part of girtline, be sure that the trestletrees hang square, hoist them up to mast head, and place them to the mast. Pass a strand from one trestletree to the other, on the fore and afterpart, and heave them close to the mast with treenails.

Send the stage up by the other two girtlines.

Send the mast makers and their tools, and the bolts up by the after girtline.

BOWSPRIT.

Commence with the gammonings of the bowsprit, the spar being properly secured by the mast makers, and the gammoning-fish fitted on.

Gammonings.

The gammonings of the bowsprit are two in number, viz: inner and outer, of $\frac{13}{16}$-inch chain.

Lengths.

Ascertain the length of each gammoning in the following manner: first the outer, take a small line, pass it over the bowsprit where the first turn would come through the hole in the cutwater, and bring the end up to the bowsprit, and haul it well tight, then measure the length of the one turn, say 27 feet.

There being 8 turns on the bowsprit, and 3 for frapping the same, making 11 turns, the whole length of the outer gammoning will be, $11 \times 27 = 49$fms. 3ft.

Measure for the inner gammoning in the same manner.

Stages.

Rig two stages, one each side of the gammoning holes, seeing the men stationed there, as well as those in the head, are supplied with tar, mallets, wedges, spunyarn, tallow, &c.

Passing.

Take the chain into the head on the same side it is intended to put the purchase on, pass the end over the bowsprit through the hole in the cutwater, up again, shackling the end to its own part underneath the bowsprit in the centre, keeping the shackle close up. Thus having one turn passed it is ready for the purchase.

GAMMONING ALONGSIDE THE DOCK YARD.

Pendant.

There is a 7½-inch pendant, 12 fms. long with an eye spliced in one end, and a salvage rove through it, to hitch to the gammoning.

Purchase Blocks.

The other end of the pendant reeves through the strop of an 18-inch treble double scored double block, hitched and seized at the distance required, the other block for the purchase is an 18-inch double scored double block, the fall is 4 inches, and length, 60 fms.

A snatch block for the leading part, a jigger tackle, for overhauling the purchase, and a tail block made fast over the bowsprit, and a rope rove through it, to haul the pendant on board.

Hitch the salvage to the gammoning, one end over, the other under, dog the ends along the chain, and seize them with spunyarn.

Outer Gammoning.

Heave round the capstan, and continue striking the chain with mallets to make it render. The gammoning being hove as much as it will bear, wedge the chain in the hole, and drive 4 nails through the links of the chain

into the gammoning-fish, overhaul the purchase, haul the pendant on board, take off the salvage, (this turn is the after on the bowsprit, and the foremost turn in the hole) pass the next turn from forward aft inside of the other part, and aft in the hole, pass it up from aft, forward on the bowsprit inside of the other part, seeing it clear of turns before putting the purchase on, every turn reeves inside of the other parts between the bowsprit and cutwater, what is called thorough footing. After the last turn is hove, pass the chain down alongside of its own part, and tar it, that it might render through the piece of hide about a foot long, and 8 in. wide, well greased, and lashed over the last part of the chain, with 3 parts of 6 yarn spunyarn laid up. The lower edge of the hide is about 1 foot from the cutwater and the chain is passed over the cutwater, round all parts of the gammoning. Put the purchase on it, and heave on it till it as taut through the hide as the other parts, then pass the stop to prevent the chain from starting back.

The stop is passed by a piece of spunyarn made fast to the standing part of the chain, and rove through a link of the last part hove, haul it tight, pass it round standing part, and through another link of the part last hove, and hitch it to the standing part; that spunyarn is called bull rope.

Stop every frapping turn the same way, the last two turns form a figure of 8, the chains cross in the bosom with the end underneath its own part; if any chain is left, cut it off, and seize the end link up to the standing part.

GAMMONING THE BOWSPRIT ON BOARD.

Use the runners and tackles, lash a snatch block to the cutwater, in the direction required for the gammoning to lead through, and a snatch block lashed to the

after part of the bowport on the middle deck, for the runner to lead through. In some ships it is better to lead through the hause hole.

Frapping turns.

For the frapping turns, lash a snatch block to the bumpkin for the lead of the chain. In heaving the frapping turns, heave one turn of the outer gammoning and one turn of the inner, and continue heaving turn and turn until finished.

Bowsprit Man ropes.

Two in number of 5 inch, length 53 feet each; one end splices round a thimble, through an eye bolt in the cap each side, or thimble spliced in the other ends, and sets up to iron stanchions at knighthead with a 2-inch lanyard.

Stirrups.

Two in number of 3½ inch, length, 9 feet each, spliced round a thimble on the man ropes, and seizes up to the fore stay.

Rigging a Stage for clothing a Bowsprit.

Take two spars the length of the topmast studding sail boom, put them out of the bowport, and over the head rail, reeve a rope through the sheave in the bees of the bowsprit each side, and pass the ends into the head; make the starboard one fast 6 feet from the end of the spar, make the port one fast 9 feet from the end of the other spar, man the ropes, haul the spars out, secure the heels in the bow port, or in the head, send a man on the spars each side where the ropes are fast, to lash a spar athwart the other two. Spread the two spars open as wide as they can get them, and lash the spar to keep them wide. Pass a lashing round the bowsprit, inside of the bees, and round the two spars; put another lashing round the bowsprit, just clear of the figure head.

There is often 6 or 8 planks lashed to the spars, to make a good platform. Some of these planks must be removed in fitting the bobstays, and setting them up; the best way is to have long planks to go fore and aft, with two spalls lashed athwart the other two, for the planks to take a bearing on. Time and labour is saved by making a good stage at the commencement.

Clothing the Bowsprit.

No. 1 collar is lashed on, at two-thirds the length of the bowsprit from the knight head, and one-third from the outer edge of the cap. The collar is fidded out round with toggles, or lash the collar round the bid-head, and wedge it out, place the collar round the bowsprit, and reeve a good strand through the eyes, pass two turns, place a spar or a long bolt over the bowsprit, for a Spanish windlass, the ends of the strand being one at each eye, pass them round the bolt, have a bolt each side to heave the strand round the bolt, that is, over the bowsprit, till the collar is close up round the bowsprit.

To secure the collar while passing the seizing, put a strand round the bowsprit over the collar, just clear of the eyes, put a bolt through the strand, and twist it up as tight as possible, and stop the bolt down out of the way.

Lashing.

Take the Spanish windlass off, unreeve the strand out of the eyes, lash the eyes with 3-in. rope, length 6 fms., pass the lashing rose seizing fashion, heave on both ends with a Spanish windlass over the bowsprit, pass 8 turns through the eye, and heave every turn well tight.

The best way to heave these collars on and lash them, is as follows: instead of heaving the Spanish windlass on top of the bowsprit, have one on each side, have two

stout short palls hung perpendicular each side of the bowsprit, and lashed or frapped to each other, under and over the bowsprit; then lay the large bolt for the Spanish windlass, horizontal outside of the spar, one each side of the bowsprit, and bring the ends of the lashing to them, and heave them with smaller bolts: the spales must be shifted out as the work proceeds.

It might appear to give a great deal of trouble, but there will be both time and labour saved by it, particularly for the fore stay collars.

Crossing Turns.

Reeve the crossing turns, one each way, between the lashing, and heave it tight, pass another turn with each end, and form a half knot at the side of the lashing, heave it well tight, pass the ends up between the centre turns, unlay the ends, and make a wall and crown knot with the strands.

Toggle.

There is a toggle lashed to the collar above the heart to project it from the bowsprit.

Bobstay Collar, No. 2.

This collar lashes on the bowsprit three feet outside of No. 1 collar, it is hove up and lashed the same way.

Bobstay Collar, No. 3.

This collar is lashed on three feet outside of No. 2 collar, hove up and lashed as No. 1 collar.

Bowsprit Shroud Collars.

No. 1 starboard collar fids out the same as the bobstay collars. This collar is lashed on the bowsprit outside and close to No. 1 bobstay collar, and hove up and lashed the same with 2½inch, 5 fms.

No. 2 Port Collar.

This collar is outside and close to No. 1.

No. 3 Starboard Collar.

This collar is lashed on outside, and close to No. 2 bobstay collar.

No. 4 Port Collar.

This collar is lashed on outside and close to No. 3 collar.

Fore Stay Collars with double scored Hearts, No. 1 Collar.

The two eyes or the two bights, are lashed underneath the bowsprit, outside, and close to No. 2 bowsprit shroud collar, with 2½-inch 5 fms.

No. 2 Collar.

This collar is lashed outside, and close to No. 4 bowsprit shroud collar.

Fore Stay Collar Bailslings, No. 1 Collar Port.

Lash the eye of the collar close underneath the heart, with a strand, and fid it out the same as the bobstay collar. This collar is lashed outside and close to No. 2 bowsprit shroud collar with the heart portside, the strand is rove under the heart and through the eye, and hove tight with a Spanish windlass. Secure the collar round the bowsprit with a strand same as bobstay collar, with lashing, 2½inch, 6 fathoms. This lashing is passed the same as bight and bight, underneath the heart, and through the eye.

No. 2 Collar, Starboard.

This collar is lashed outside, and close to No. 4 bowsprit shroud collar, the heart on the starboard side, and secured the same as No. 1.

Fore Stay Collars, Warped.

These collars are lashed on the bowsprit the same way as the bailsling collars, they require no fidding out, as they are warped round a cask.

Bobstays, No. 1.

Reeve the bobstay through the upper hole in the cutwater, let the two parts of sinnet come square with each other through the hole; reeve a rope through the heart of each collar, and make it fast round both ends of each bobstay, haul them up to the collars, put a luff tackle on each rope, and bouse them up tight to their respective collars. Set the inner bobstay off at 2 feet 6 inches from the lower part of the collar, down the bobstay, there make a chalk mark, where to marry for splicing.

Bobstay, No. 2.

Drift for setting up middle bobstay: set it off at 2 ft. 9in., it being a longer rope, will stretch more than No. 1.

Bobstay, No. 3.

Drift for setting up outer bobstay: set it off at 3 ft. being a longer rope, it will stretch more than No. 2.

Splicing Bobstays.

Unlay the ends, and marry the strands, bringing the two chalk marks together; let it be married slack, so that the fid can be put in by hand each time, put the strands in once and a half each way, taper the ends, and marl them down, so that it be a good taper to lay round the heart. Parcel and serve over the splice.

Seizing the Hearts in Bobstays.

A 14-inch heart, seized in each; the back of the heart is stopped at the centre of the splice with a small strand nippered with a bolt, put a strap through the heart, hook a tackle to it, haul the bobstay out straight in a line with the stem, put a strand round the two parts close to the heart, and heave the two parts close with a Spanish windlass; put a stop of spunyarn on to keep the two parts close, take the strand off, pass the seizing 6 and 5 turns, and 3 crossing turns, seizing, 2 in. 5 fms.

Lanyards, 5 inches, 6 fathoms.

Splice a running eye in one end, put it over the heart on the collar, reeve the other end through the heart in the bobstay, pass two turns, well tar and grease the parts; set them up with luff tackles, hook the single block to the lanyard, double block to a strap round the two parts of bobstay near the stem, reeve the hauling part through a block hooked to a strap round the bowsprit, haul it tight, make a cat's paw in it, and hook the double block of another luff tackle to it, and the single block to the knight head. Man the fall, haul every turn tight as they are reeved, when the last turn is tight, rack the end to the other part.

Sometimes the bobstays are set up on both ends of the lanyard, if so, one end must be rove through a leading block round the bowsprit.

Bowsprit Shrouds.

There are two each side of the bowsprit, with a hook in one end, to hook to a bolt in the bows, and a heart in the other end to set up to the collar with a 3½-inch lanyard, 4 fathoms.

FORE MAST.

Top tackle falls are used for girtlines.

The girtlines are lashed round the mast head, before the mast is steeped, put man ropes on the mast head.

Fore Cross Trees.

If the Crosstrees are sent up the port side, bend the port girtline on the centre, and stop it to the starboard horn, that will take it up endways, when it is high enough, cut the stop, and bear the crosstree in its place. Send the other crosstree up the same way; the mastmakers will bolt them in their proper places, before anything else is done aloft.

FORE TOP.

Sending the Fore Top up, Starboard ½ Top.

Reeve the starboard fore girtline under the ½ top, and through the third futtock plate hole, with a round turn, and two half hitches round the standing part; the girtline to be kept at the underneath part of the top, with a good stop on the forepart.

Put the main girtline on the after part of the top, man the girtlines and walk the ½ top up, keep it clear of the trestletrees with the main girtline; when the stop on the forepart of the top is close up to the block, cut it, and the top will hang square in the girtline, and may be easily placed.

Port, half top.

Send it up by the port girtline in the same manner.

Mast-makers bolt the top, and nail the bolster on.

Fore Cap.

Send the cap up into the top before the mast is rigged, there being more room in the lubber's hole for it to go up, and there is sufficient room in the forepart for it, without obstruction to the eyes of the rigging. Send the forepart of both girtlines down through the lubber's hole on the port side, and bend a port girtline to the after part of the cap, and stop it to the forepart; make the starboard girtline fast to the forepart, when the cap is above the top, cut the stop and place the cap over the hole, forepart of top clear of the rigging and mast.

The following plan of Mr. Carden's for sending up half tops and placing them at the mast head, is as good as can be adopted.

There are two boards lashed to the trestletrees, one on the fore part, and one in the after, with a bolt in the centre of each, for the lower edge of the top lap against the top is slung with the outer edge upwards, and when

the top is above the crosstree, land the lower edge againt the bolts, lower the girtlines, and the half top will go into its place, the mast-makers will take the piece of wood out from under the top with a wedge.

RIGGING FORE MAST.

Bolster Clothes.

There are six pieces of canvass the length and breadth of the bolster, well tarred and nailed on the bolster.

Shift the girtlines from the mast head to the after part of trestletrees, put a small girtline on the after part of the mast head.

Fore Pendants.

Lash one side of the eye to any place convenient, put a jigger on the other side, and haul the eye well open, then bend the eye downward, allowing the short leg to be the fore part of pendant. Starboard pendant: make the starboard girtline fast to the thimble, put a stop on half way up, and a stop on the after part of the eye. Walk the pendant up to the block, one man takes hold of the eye, and another cuts the stop, haul on the girtline, put on the small girtline about four feet from the seizing; cut the stop off the girtline when the pendant is high enough, a man on the mast head, hauls it over, (it is much to the man's advantage when the eye is bent well down) lower both girtlines. The man at the mast head unreeves the small girtline out of the block, and reeves it again ready for the port pendant, which it put on the same way.

Pendant Blocks.

These blocks are lashed to the thimble of the long leg of the pendant, and are frapped together on the afterpart of the mast.

Fore Runners.

Two in number; these are rove through the block that is lashed to the thimble of the pendants, and is made fast round the bowsprit, close to the knight head. The lower block is hooked to a strap round the bowsprit, the leading block is hooked to the same strap.

Staying the Mast.

Man both tackle falls, when the mast is staged well forward, rack and hitch the falls to its own part, and coil them out of the way.

Frequently the mast is stayed with one runner, one-third down the mast, and the other half way down, with salvage straps round the mast.

Fore Tackle Blocks.

These blocks are lashed to the thimble of the short leg of the pendant.

Fore Shrouds, No. 1 Starboard.

Open the eyes and bend them down the same as the pendants.

Seize a toggle on the girtline, 12 fathoms from the end; the toggle is put between the two parts of the shroud, one third down; put a stop on the shroud above the toggle, and one between the toggle and the seizing, and another on the afterpart of the eye.

The shrouds are sent up, and put over the mast-heads, the same way as the pendants are.

After the shroud is over the masthead, reeve the lanyards, and put the fore tackle on them to haul the slack of the lanyards through.

Put the luffs on the shrouds, and hook the lower block to a strap and toggle that is round the lanyard.

Put the fore tackle on the luffs, and sweat the shrouds well up; beat them close round the masthead with the commander.

All the other shrouds are sent up in the same way.

As soon as the shrouds are placed at the masthead, set up both shrouds at one time. If they are set up one at a time, they would haul the eye of the shroud round the masthead, and disturb the seizing, for the forepart comes down, and the afterpart goes up. It will also prevent the dead eyes from coming square.

The shrouds are sent up to the masthead by their respective numbers, as follows:—

No. 1 starboard	No. 6 port
„ 2 port	„ 7 starboard
„ 3 starboard	„ 8 port
„ 4 port	„ 1 starboard swifter, a single shroud.
„ 5 starboard	„ 2 port „ „

FORE STAYS.

Sending the stay up.

Shift the girtlines from the trestletrees up to the masthead, send the ends down through the forepart of lubber's hole, on each part. Place the upper stay on the top of lower stay, the two forks of the collar being fair with each other; lash them together, with a good seizing of spunyarn round both, close under the fork or crutch, and two on each side of the half collars. Send them both up together. Bend the ends of both girtlines round both stays, below the fork of the collars and a stop on the collar, and a good stop on the eyes; hoist the stay up, and lash the eyes at the after part of mast for a full due, with 4½ in. 5 fthms. each.

Lanyards 5½ inches, 15 fathoms each. Splice a ruuning eye in one end, to go over the heart of the collar, render it tight underneath the heart.

If it is the long collar, splice the lanyard into the heart of the collar. Reeve the lanyard through the heart of the stay, and through the heart of the collar put a luff tackle on the stay, before hauling it out.

For Staying the Mast.

Reeve the runners through the blocks, take the ends forward, make them fast round the skidds, overhaul the tackle, and hook them and the leading block to the same place.

Staying the Mast.

Man both falls and stay the mast well forward, rack and hitch the falls, and coil them up.

Main Shrouds.

Send them up by their respective numbers; reeve the lanyards and set them up the same way as the fore.

Main Stays.

Lash the two together, and send them up the same as the fore; set them up to the cross-piece before the fore mast and set them same as the fore.

Futtock Shrouds.

Take the dimensions for the length, and send them up the same as the fore.

MIZEN MAST.

Girtlines.

Peak and throat haulyards are used for girtlines, with two blocks of 11 inches, strapped with lashing eyes.

Mizen Crosstrees.

Send them up the same as the fore.

Mizen Top, a whole Top.

Send the top up fore side of the mast; reeve both girtlines underneath the top, one end each side, through the futtock plate hole from forward, hitch the end to its own part, put a good stop on both, at the after part of the top, hitch the main girtline to the fore part, and stop it to the after part, hoist the top up, haul on the main girtline to keep the top clear of the trestletrees; when the top is close up to the block, cut the stop off the main girtline, and haul it tight.

Cut the stop off the mizen girtline, hoist the top up, haul on the main girtlines that will trip the top over the mast head, and it will hang square in the mizen girtlines; lower the top down and place it.

If the top is sent up the after side of the mast, stop the girtlines to the forepart: make a rope fast to the after part, and stop it to the fore part; it is taken as far aft as it can go, to keep the top clear of the trestletrees. When the top is up to the mast head, cut the stops, haul on the girtlines, and the top will go over the mast head.

Mizen Cap.

Send the cap up the same manner as the fore.

Bolster Cloths.

Nail them as the fore.

Mizen Burton Pendants.

Send them up by the girtline, put the eye over the mast head, one leg each side of the mast head, and hook the burton tackles to them.

Staying the Mast.

Lash a luff tackle to the mast one-third down from the trestletrees, hook the lower block near the main mast. Stay the mast well forward, rack and hitch the falls and coil them up.

Mizen Shrouds.

Send them up to the mast head the same as the fore, and set them up the same.

Mizen Stay, No. 1.

Sent and set up the same as the fore.

Futtock Shrouds.

Take the dimensions for the lengths, and send them up in the same manner as the fore.

Fore Cap.

Put the fore cap on with the spare topmast; lash the top block starboard side of fore mast head, reeve the end of a 9-in. hawser through it, and through the live

sheave at the heel of topmast, leaving sufficient end to make fast round topmast head, rack the two parts of the hawser together about half way up the topmast, put a good lashing round the hawser and topmast head. If the topmast is taken from the dock side, put the fore tackle on to assist the hawser, and a tackle to ease the topmast on board; take the hawser to the capstan, and man the fore tackle when the topmast is entered between the trestletrees, make the end of the hawser fast round foremast head, take the lashing off that is round the hawser and topmast head, and take the racking off; put the fore tackles on the heel to assist putting the fore cap on, hoist topmast up four feet through the cap, and lash it to the topmast head with two pieces of 4-in. rope, take a clove hitch round the topmast; on each side reeve the ends through the eye bolts in the cap, one forward and one aft, each side, secure the ends round topmast head for the cap to go up square, heave the topmast up till the cap is above fore mast head, put a slue rope round the top mast, and with a handspike slue the mast, till the cap is fair for going on; then lower the topmast, beat the cap on with a commander, and take the lashing off.

Land the heel of topmast on deck, cast the end of the hawser off from foremast head, and make it fast to the foremast eye bolt in cap, port side, unlash top block, and hook it to the after eye bolt in cap, starboard side.

Heave the topmast up four feet through the cap, put a girtline on the after part of topmast head, fid the mast to ascertain it is all right, take the fid out, and lower the mast two-thirds down.

Send the Crosstrees up.

Send one end of the girtline that is fast at topmast head on deck, abaft the top, make it fast to the centre of the crosstrees, and stop it to the forepart; bend the main girtline to the crosstees, to keep it clear of the

top and cap; sway the crosstres above the cap, slack the main girtline, let the fore part rest against the mast, land the after part on the cap, make a strand fast each side of the after crosstree, take it to an eye bolt in the cap to prevent it slipping off the cap, lower the topmast down, and the crosstrees will gradually come down on the cap; one man on the cap, and four round the mast head to lift the crosstree forward over the cap hole fair for the other topmast to enter.

Rack the two parts of the hawser, cast the ends off from the cap, make it fast round the topmast head, put a good lashing round the hawser and topmast head, for lowering it on deck, take the heel aft for stowing it on the booms.

Unreeve the hawser, and reeve it through the live sheave of the other topmast and secure as before, sway it up high enough to rig it.

Top Tackle.

Hook the top block to the after eye bolt in cap, port side, reeve the top tackle pendants through it, and through the dumb sheave in heel of topmast, and make it fast to the foremast eye bolts in cap, starboard side.

Hook the top tackle blocks and reeve the fall, and haul it taught, the standing hook will be the upper block, the swivel hook, the lower block.

Unreeve the hawsers, and reeve the starboard top tackle pendant, hook the blocks, reeve the fall, and hawl it tight, and rack the falls.

RIGGING THE TOPMAST.

There is a chain necklace let into the bolster with two tails on each side, the after one starboard side is to shackle the jib haulyard block. The after leg, port side, is to shackle the topmast staysail block.

Topsail Tye Blocks.

There are two of 20-inch iron bound blocks with shackles that shackle to the foremast legs of the necklace.

Bolster Cloth.

Nail it over, the same as for the foremast.

Top Burton Pendants.

Send them up by the girtline, put them over the mast head, hook the top burtons to the thimble of the pendant.

Topmast Shrouds.

Send the shrouds up by their respective numbers, commencing with No. 1 pair starboard side.

Fore Topmast Backstays.

Send them up the same as the shrouds, the single backstays are the breast backstays; put them next to the shrouds, then the after backstays.

Topmast Cap.

Shift the girtlines from the crosstrees up to the mast head, and send the foremast ends down before all; bend the ends to the foremast eye bolts, and stop them to the after part of cap, sway the cap up to the mast head, let four men get round it, cut the the stops, haul on both girtlines, land the after end on the top mast head, slack the girtlines and lift up the forepart, and slide the cap on the mast head.

Topmast Stays.

Send the ends of the girtlines down, abaft the fore mast crosstrees, bend them on the fork of the collars, stop the girtlines to the eyes, sway them up to the mast head, lash the eyes abaft the mast with 3-inch rope, 4 fathoms each. Pass the lashing rose seizing fashion.

Jib Stay.

Send it up above the topmast stay, send the eyes down through the collars of the topmast stays, lash them the same as topmast stays and below them.

Sail Tackle.

Hook the sail tackle pendant round the topmast head, take the lower block out to the bowsprit cap to stay the topmast. Length of fall, take 4 times the length from hounds of topmast to the deck, say 437 feet.

Fidding Fore Topmast.

Man the top tackle falls, and walk the topmast up, when high enough put the fid in, stay the mast well forward with the sail tackles.

Setting the Shrouds up.

Dead eyes are turned in, and the lanyards rove previous to being put over the mast head. Reeve the lanyards and set up the starboard foremast pair, first with a 4-in. rammer, an eye spliced in one end to hook on the burton; the end is rove through an 8-inch clump block, and a rolling hitch taken round the shroud, the block is strapped with a thimble, the lanyard is rove through it, and hitched round the strap. Put a toggle in to prevent the hitch from being jammed, set the shrouds well up, rack the lanyards, set the port pair up, and so continue until they are all set up. Secure the lanyards and stop the ends up and down their own parts.

Setting the Backstays up.

Set the breast backstays up with their own falls: for the after backstays, put a salvage strap round the backstay, abreast of the top, and hook the double block of the burton to it; send the runners, and lower the blocks down into the channels, and set the backstays up the same way as the shrouds.

For Topmast Stays.

Put the hanks on the inner stay. Reeve the ends of the stay through the holes in the bees of the bowsprit, put a tackle on each, and haul them tight through

the bees of the bowsprit. Turn a heart-shaped thimble in each, allowing 6 ft. drift from the knight-head lanyard, 3½ in. 8 fms. each. Reeve the lanyards, put a tackle on each, and set them up together. Let two men beat the topmast crosstrees to place them.

Main Topmast.

If the ship is required to be rigged as soon as possible, act differently with the main topmast to what has been done with the foremast.

The dead eyes being turned in the shrouds and backstay, fid the mast with the hawser and rig it after it is fidded, it will save both time and labour. Set each pair of shrouds up as soon as they are over the topmast-head, and backstays also.

Top Block.

Lash the top block up to the mainmast-head portside. Reeve a 9-inch hawser through it, and through the live sheave in the topmast, and clove hitch the end above the hounds; rack the two parts of the hawser together, put one racking on one third up, and one two thirds up the topmast, put a good lashing round the hawser and topmast-head.

Take the hawser to the capstan, and enter the mast-head through the trestletrees, take the lashing off that is round the hawser and topmast-head, heave the mast-head up four feet through the cap, and lash the cap to the topmast-head the same way as the fore. Put the main tackle on the heel, to assist putting the cap on. When the cap is above the mainmast-head, slew the mast till the cap is fair for going on, then lower the mast and beat the cap on, and take the lashing off the cap.

Cast the end of the hawser off from the hounds, and reeve it through the foremost eye bolt in the cap, the starboard side. Hitch and seize it, take the rack-

ings from the two parts of the hawser, sway the mast four feet through the cap, and put a girtline on the after part. Take the main tackle off, heave round the capstan, and fid the mast, to ascertain that it is all right. Take the fid out, and lower the mast two-thirds down, send the girtlines down abaft the top, and send the crosstrees up the same way as the fore. Lower the mast below the cap. Rack the two parts of the hawser together, cast the end from the eye bolt, and hitch it round the topmast-head, lash the hawser to the topmast-head, lower the mast on deck, take the heel forward for stowing on the booms; unreeve the hawser from the spare topmast, and reeve it through the live sheave of the other topmast, and secure it the same way as the other; unlash the top block from the masthead, and hook it to the after eye bolt in the cap. Place the crosstrees fair for the topmast to enter, heave the mast up through the trestletrees, take off the lashing, and cast the end of the hawser off; make it fast to the foremost eye bolt in the cap. Cast the rackings off, heave the mast up till the crosstrees are 5 ft. above the cap. Shackle the topsail tye blocks to the legs of the necklace, nail the bolster cloths on, put the burton pendants on, and hook the burton to them, put one girtline on the crosstree, and one on the mast-head. To send the men up: put the sail tackle pendant round the mast-head, below the crosstrees, send the lower block into the fore top, for staying the mast. Send the men down from the cap and crosstrees, heave round the capstan, and fid the mast high enough; put the fid in, stay the mast well forward with the sail tackle, send four men up to the crosstrees by the girtline, then shift it down to the crosstrees.

To Rig the mast.

Bend the starboard girtline on to No. 1 pair of shrouds, send it up to the masthead, put them on, and

set them up the same as the fore. As soon as each pair is over the mast, set them and the backstays up.

Topmast Stays.

Send them up and lash them the same as the fore. The upper stay leads over a chock between the fore trestletree, and sets up to the iron stopped heart, after side of the foremast. A thimble is turned in the stay, and sets up with 3½-inch lanyard, 6 fathoms; serve the stay in wake of the chock.

Lower Topmast Stay.

Reeve the end up through a clump block at the after part of the foremast, below the top, put a tackle on it, and haul it tight up. Turn a thimble into it, and set it up to the collar above the eyes of the rigging with a 3½-inch lanyard of 5 fathoms.

Mizen Topmast.

Send the mizen topmast up, and rig it the same as the main. Turn a thimble in the stay, and set it up to a thimble strapped round the eyes of the main rigging.

Jib Boom.

Enter the jib-boom through the cap sufficient to rig it.

1st, put on the foot ropes: 2nd, starboard spritsail guy: 3rd, port spritsail guy: 4th, martingale stay. Put the boom irons on.

Spritsail Gaffs.

If they are on board, put the jaws through the bow port, put a tackle on the topmast stay, hook the single block near the jaws of the gaff, stopper the topmast stays at the bees of the bowsprit, turn the thimbles out, and reeve the ends through a hole in the jaws of the gaff. Man the tackles, and haul the jaws out near the bees of the bowsprit.

To Rig the Spritsail Gaff.

1st, put the fore guys on: 2nd, the after guys: 3rd, martin guys or jumper: 4th, spritsail braces. If required, of 3½-inch rope. An eye is spliced in one end, to go over the gaff's end, the other end reeves through a block under the top, and sets up on deck. 5th, spritsail lifts: an eye is spliced at one end to go over the spritsail gaff, the other reeves through a 9-in. clump block at the bowsprit cap, and sets up to an eye bolt in the knight head. Sometimes the lift is put on first, and sets up to an eye bolt in the bowsprit cap.

I have seen the after guys and jumper in one, by splicing a short piece in to form a horse shoe, for the eye to go over the gaff.

Dimensions for the length as follows:

	Ft.	Inch.
First, from spritsail gaff to cap, 28ft., and from cap to knight head, 50ft. + 28ft. =78ft.; length of one lift - -	78	0

Martingale.

Put a jigger on the cap, hook the single block below the jaws, and trice it up close the bowsprit, and to the cap, reeve a lanyard through the jaws each side, reeve them up through a hole each side, in the bees of the bowsprit; an eye is spliced in one end, the other lanyard reeve through it, haul it tight, and hitch it. To rig the martingale: 1st, put on martingale stay; 2nd, martingale guys.

Jib Stay.

Take for the lengths as follows:

1st.— From the fore topmast head to sheave hole in the jib-boom, is - - -	125	0
2nd.—From ditto to the knight head -	80	0
3rd.—The half collar - - -	9	1
Length of rope required for the stay -	214	1

This stay is fitted the same as the fore topmast stay. What the rope will stretch will make the Flemish eyes and splice the half collar. Reeve the stay through the jib-boom and martingale, and set up to the knight head with a runner and tackle. Reeve the jib haulyards, make the end fast to the end of the jib-boom, to keep it up when out.

To rig the Jib-boom out.

Hook a block to the bowsprit cap, port side, reeve the heel rope through it, and through the sheave hole at the heel of the jib-boom, make the end fast to the eye bolt in the cap, starboard side, haul the boom out, and secure the heel. There are two chain straps fitted with slips, one to go round the bowsprit, and over the heel of the jib-boom, the other shackles to an eye bolt starboard side of the cap, leads round the heel of the jib-boom, and shackles to the port side the cap with a slip; the chain is to be $\frac{13}{16}$ equal to 8-inch rope Set the rigging up: 1st, the martingale guys, commonly called back ropes; 2nd, spritsail guys; 3rd, reeve the spritsail martingale through a clump block in the stem, turn a thimble in it, and set it up to an eye bolt in the knight head; 4th, jib stay; a 10-inch clump block is turned into the stay, a 5-inch runner rove through it, 8fms. long; the end of it splices round a 11-inch double, the other end made fast to an eye bolt in the knight head; a single block fitted with an hook and hooked to an eye bolt at the knight head; size of fall, $3\frac{1}{2}$ inches, 20 fathoms.

To spar the Rigging down for Rattling.

Let a man mark the foremast shrouds all the way up for the rattlines to be 15 inches apart, and lash the spars 4 feet from each other, with the foremast ends flush with the foremast shrouds as he goes up, with assistance of the other men.

Rattling the Rigging down.

The rope for rattling ($1\frac{3}{4}$-inch for fore and main rigging) being previously stretched. Commence putting them on as follows: splice an eye in the end, form the hitches round the shrouds, seize the eye to the foremast shroud with two yarn seizing, allowing the eye to be 4 inches from the shroud. After the hitches are hove tight round the shrouds, splice the other eye, allowing it to be 4 inches from the shroud. Every fifth rattline is taken to the after shroud, this is called a ketch rattline.

During the time of rigging the ship, the men going up and down the rigging, the rattlines will stretch after the ship is fully rigged, ready for blacking down, heave tight and square the rattlines, and the eyes will come close or near the shrouds, and may not require shortening.

The lengths required for the fore rattlines can be taken in the following manner.

	Fthm.	Ft.	Inch
Upper rattline is put on 8 feet below the bolster, and the breadth of shrouds from No. 1 to No. 8, is - - - - -	0	4	0
It hitches round 6 shrouds, each takes 2ft. $\times 6 =$ - - - - - - -	2	0	0
Length of upper rattline will be - -	2	4	0
The lower rattline will be 7 feet from the channels, & from No 1 to No. 8 will be	3	4	0
And will take for 6 hitches - - -	2	0	0
Length of lower rattline - - -	5	4	0
Add the upper and lower lines together, divided by two, will give the average length of one rattline, 2fms. 4ft. 0in. + 5fms. 4ft. = 8fms. 2ft. $\div 2 =$ - -	4	1	0
No. of rattlines are $42 \times$ 4fms. 1ft. = -	175	0	0

Every fifth rattline is taken to the after shroud, it is called a ketch rattline; they will be hitched to the eight shroud, the hitch will take 2 feet; upper rattline from No. 8 to No. 9 shroud, is 1ft.+2=3ft., length of upper rattline; lower rattline from No. 8 to No. 9 shroud is 6 feet, the hitch will take 2ft.+6ft.=8ft., the length of the lower rattline; add them together, and divide it by 2; 8ft.+3ft.=11ft.÷2=5ft. 6in., the average length of one rattline.

	Fthm.	Ft.	Inch.
Number of rattlines, 7×5ft. 6in.= -	6	2	6
Add the two together, 6fms. 2ft. 6in.+ 175fms.= - - - - -	181	2	6

That will be the length after it is well stretched for one side Rope for rattlines ought to be well stretched before used; if three coils are drawn from the store, it will be sufficient for both sides, each coil being 113fms. ×3=339fms., it will stretch 24fms. very easily: 24fms. +336fms.=363fms.

Measure for all the other rattlines, in the same manner as before mentioned.

Prepare for Rigging the Fore Topgallant Mast.

First put the stay on the funnel and flying jib stay third flying jib haulyard block, fitted with a short eye and a grummet worked through to go over the funnel. Send the girtline down before all, and bend it to the stays, about 6ft. from the funnel, and stop the funnel to it, hoist it up to to the mast head, placing the funnel over the hole in the cap, stop the stays to the crosstrees send the girtline down abaft the top starboard side for No. 1 pair of shrouds. Place the eye over the funnel, then the port pair No. 2; put the grummet strap on for the main royal stay, with the thimble on the after part, put the backstays on, send the royal stay up before all, place it over the funnel, and the backstays up abaft all, and place them; reeve the signal haulyards through the truck, and place it over the funnel.

Topgallant Mast Rope.

The length will be four times the length of the masts from the topmast cap to the deck, that is 78 fms. 2 ft.

There are two lizards of $2\frac{1}{4}$ inch, 2 fathoms each.

A thimble is spliced in one end of each, to reeve on the mast rope; reeve the mast rope through it, and through a thimble of one lizard, and through a sheave hole in the heel of the mast, and through a thimble of the other lizard, and make it fast to the foremast eye bolt in the cap, port side, the lizard on the hauling part reeves through the royal sheave hole, and hitches to its own part.

The lizard on the standing part reeves through the top gallant sheave hole, and hitches to its own part. Reeve the mast rope through a leading block, and walk the mast up. As soon as the mast head is through the funnel put the royal stay and backstays on, then put on the truck, sway the mast up, place the funnel fair on the hounds, fid the mast, reeve the stay through a sheave hole at the jib boom end through the martingale, and set up to the knight head. Stay the mast well forward. Reeve the shrouds through the horns of the crosstrees, and over the futtock plate. Turn the thimbles into the shrouds and set them up to a thimble strapped round the dead eyes in the top with $2\frac{1}{4}$ lanyard, $2\frac{1}{2}$ fathoms each.

Backstays set up at the after part of the channels, with $2\frac{1}{2}$ lanyard, 6 fathoms each.

Shifting backstays when used, set up abreast of the mast with a tackle.

Flying Jib Boom.

Make a tail block fast to the boom iron, reeve a rope through it, make the end fast to the heel of flying jib-boom, put a stop on the head, haul on the heel rope, and point the boom through the iron.

Fore Truss Straps.

The starboard straps are placed close to the quarter block. The port strap is placed close to the standing part of truss pendants, the eyes lash on the top of the yard 2-in. 4-fathoms; let one thimble be above the other, and standing part of truss pendant the same way.

Truss Pendants.

Reeve the ends through its own eye round the yard, starboard one outside of the truss strap, the port one inside of port strap.

Fore Clewgarnet Blocks.

The straps of these blocks lash on the top of the yard 2-feet 6-inches outside of the truss straps, with 1½-inch 3½-fathoms, the blocks underneath the yard, inclining a little forward to clear the top sail sheet.

Fore Yard Slings

Of 1¼ chain equal to 16-inch rope. There are two parts; length for each part is once the round of the yard, and 2-feet; length for each 9-ft. 7-in.

There is a ring through the two end links, at the other ends, there are two long links to receive the bolt of a shackle that connects the slip to the mast end slings. Reeve the slings at the centre of the yard between the two jeer blocks, take the ring up abaft the yard, the two ends come up on the foreside of the yard, and reeve through the ring and shackle to a slip that would be shackled to the mast head slings when aloft. Eye bolts on the yard to be served with a rope yarn.

Rolling Tackle Straps.

Five inch rope fitted as a grummet strap, put over the yard arm, and 9-feet inside of quarter iron, seize a thimble in it on top of the yard. These straps are not always put on, some officers do not approve of them.

To Rig the Yard Arms.

Put the jackstays on, and after the stirrup of the foot ropes are put over the eye bolts, reeve the jackstay through the eye bolts, splice a thimble in each end, allowing 2-ft. 6-in. drift for setting up, with a 2-in. lanyard 3-fathoms long.

Head Earing Straps.

A 3½-inch rope fitted as a grummet strap, put it over the yard arm, seize a thimble in it, and beat it close to the jackstay.

I have seen the foot ropes put on first to give more room under the jackstay.

Foot Ropes.

Reeve the eye over the yard arm, and beat it close to the earing strap, lash the two thimbles with 2-in. 5-fms., trice them up to the slings of the yard.

Yard Tackle Pendants.

Put the eye over the yard arm, and beat it close home to the foot ropes.

Brace Blocks.

Put the strap over the yard arm, and beat it close to the yard tackle pendant.

Lift Blocks.

Put the strap over the yard arm, and beat it close to the brace block.

Leachline Blocks.

Two in number, one on each yard arm. Outer is seized to the jackstay, 6 ft. inside the quarter iron, inner is seized to the jackstay, 6 ft. outside clewgarnet blocks.

Stabline Blocks,

Two on each side fitted with tails, they are hitched to the jack stay at the same place as the leach line blocks. These blocks hang down before the yard abaft the sails. There are two double blocks fitted with tails made fast to the jeer block strap, they hang down before the yard, to lead the stablines on deck.

To Rig the Yard Arms.

Put the jackstays on, and after the stirrups of the foot ropes are put over the eye bolts, reeve the jackstay through the eye bolts, splice a thimble in each end, allowing 2-ft. 6-in. drift for setting up with a 2-in. lanyard 3-fathoms long.

Head Earing Strops.

A 3½-inch rope fitted as a grummet strop, put it over the yard arm, seize a thimble in it, and bear it close to the jackstay.

I have seen the foot ropes put on first to give more room under the jackstay.

Foot Ropes.

Reeve the eye over the yard arm, and bear it close to the earing strop, hitch the two thimbles with 2-in. 5-fms., trice them up to the slings of the yard.

Two Tackle Pendants.

Put the eye [illegible] the yard arm, and bear it close home to the [illegible]

[illegible] bear it close to

[illegible] bear it close to

[illegible] arm. Outer is [illegible] other iron, inner [illegible] wgurnet blocks.

[illegible] hey are hitched [illegible] the leach line [illegible] the yard abaft [illegible] fitted with tails [illegible] hey hang down [illegible] deck.

Bunt Stablines.

A single block fitted with a tail makes fast to the slings of the yard, and hangs down before the yard abaft the sail.

Lay the yard tackle pendants straight along the yard, and stop it to the jackstay. Truss pendants, stop them on the top of the yard.

Sometimes the foot ropes are put on before the jackstays, then the foot rope makes a bolster for the jackstay, and leaves sufficient room for a man to put his hand between the jackstay and the yard.

Main Yard.

Place the mast head slings, and lash the jeer block the same way as the fore.

Rigging Main Yard.

This yard is rigged the same way as the fore (except that there are preventer braces to the main yard, and none to the fore.) Place the rigging and block on the yard.

1st, lash jeer blocks close to the slings: 2nd, lash quarter blocks close to the jeer blocks: 3rd, lash starboard truss strap: 4th, reeve port truss pendants round the yard close to port quarter block: 5th, port truss strap lashes outside and close to truss pendants, allowing the starboard thimble to be 4 inches above the port thimble,, and pendants the same way: 6th, reeve the starboard truss pendant close to truss strap: 7th, clewgarnet lashes 2-ft. 6-in outside of the trusses: 8th, reeve the slings round the yard: 9th, serve the eye bolts on the yard with a rope yarn: 10th, put on the rolling tackle straps: 11th, put the eyes of foot rope stirrups over the eye bolts.

Yard Arms.

1st, put the jackstay on, reeve it through the eye bolts, splice the thimble in, and set it up: 2nd, head

earing straps; 3rd, put the foot ropes on, lash the thimbles together and trice it up to the slings of the yard: 4th, yard tackle pendants: 5th, preventer brace blocks: 6th, after brace blocks: 7th, put on the lift blocks: 8th, seize the leach line blocks on, and hitch the stab line blocks on the same way as the fore: stop yard tackle pendants, and truss pendants on the yard, the same as the fore.

Cross Jack Yard.

Mast head slings of $1\frac{1}{8}$-inch chain, equal to 11-inch rope placed at the mast head same as for the fore.

Rigging the Yard.

For the slings, an iron band round the yard, with an eye to shackle the slip, connected to the mast head slings. 1st, lash the quarter blocks: 2nd, lash the truss straps, and reeve the pendants the same way as the fore.

Yard Arms.

1st put the foot ropes on, lash the thimble, and trice them up to the slings of the yard, and nail the stirrups round the yard. 2nd, put on the brace blocks.

Rigging Fore Topsail Yard.

1st, tye blocks, two in number of 20-in. iron, bound with swivel and lugs, they are bolted to an iron band round the yard. 2nd parrel.—The long leg is passed under the yard, and comes up over, and lashes to the short leg with $1\frac{1}{2}$-in. 3-fms. 3rd, quarter blocks, or top-sail sheet blocks. The blocks are lashed out side of the parrel. 4th, top sail clewline blocks; these blocks are lashed outside, and close to the topsail sheet blocks, with 1-in. 3-fms. Frequently officers prefer a double block for the sheet and clewline, instead of two single blocks, serve the eye bolts with a yarn.

Rolling Tackle Strap.

It is fitted as a grummit strap, made from 4-in. rope. Place it half way out on the yard, and seize a thimble through it. Put the eyes of the foot rope stirrups over the eye bolts on the yard.

To Rig the Yard Arms.

1st, put on the jack stay, reeve it through the eye bolt, splice the thimbles in and set it up: 2nd, head earings strap, a grummit strap made from 3-inch rope, with a thimble seized in it.

3rd foot ropes.—Put the eye over the yard arm, at the other end there is a lashing eye; which will be lashed on the opposite quarter of the yard 8-ft. 6-in. from the centre of the yard. 4th, topsail brace blocks. 5th, lift blocks. 6th, Flemish horses. Put the thimble over the goose neck at yard arm, and at 13-ft. 6-in. from it, seize the eye round the yard.

It is considered best to put the foot ropes on first.

Main Topsail Yard.

Is to be rigged the same as the fore.

Mizen Topsail Yard.

To rig it, 1st tye block, a 17-inch, iron bound with swivel and lugs, and bolts to an iron band round the centre of the yard: 2nd, parrel rope, the long leg is passed round the yard and lashed to the short leg on the top: 3rd, Top sail clewlines and top gallant sheet blocks: 4th, serve the eye bolts: 5th, Rolling tackle strap and seize the thimble in: 6th, put the eyes of foot rope stirrups over the eye bolts.

To rig the Yard arm.

1st, put on the jackstay reeve it through the eye bolts, splice the thimbles in, and set it up: 2nd, head earing straps, a grummet strap with a thimble: 3rd, put one eye over the yard arm, seize the other eye on

the opposite quarter, 5 feet 10 inches from the centre of the yard: 4th, put the brace block on, with the block fore side: 5th, Flemish horses, one end is spliced round a thimble through an eye bolt at the yard arm, a lashing eye at the other end to seize on the yard, 6 feet inside of the cleat, after the lift is on.

Fore top-gallant Yard.

To rig it: 1st, slings on the centre of the yard: 2nd, put the parrel on close to the slings, the long strap port side, short strap starboard side: 3rd, lash the top-gallant clewlines, and royal sheet block, one each side of the parrel: 4th, make two grummet straps from 3-in. rope, place it one-third of the yard from the centre on each side, and seize a thimble in each: 5th, jackstay; put the eye over the yard arm, and set it up at the centre of the yard with a lanyard, nail the jackstay on the yard with strips of hide: 6th, foot ropes; put the eye over the yard arm, and lash the other eye on the opposite quarter, 5 feet from the centre.

Main top-gallant yard.

This yard is rigged the same as the fore,

Mizen top-gallant yard.

This yard is also rigged the same as the fore.

Fore Royal Yard.

To rig it; 1st, put the parrel on, place the short strap, port side, near the centre, long strap, starboard side: 2nd, royal clewline blocks lash one each side of the parrel: 3rd, make two grummet straps, and place them on the yard, one-third from the centre each side: 4th, jackstay; put the eye over the yard arm, set it up at the centre with a lanyard; nail the jackstay to the yard with strips of leather: 5th, foot ropes; put the eye over the yard arm, the other eye will seize on the opposite quarter, 3ft. 10in. from the centre.

Main Royal Yard.

This eye is rigged the same as the fore.

Mizen Royal Yard

Is also rigged as the fore.

THE YARDS BEING ALL RIGGED,

Send up Fore Topsail Yard.

There is a pair of brail slings fitted, for sending the topsail up, and yards also; reeve them round the yard between the two tye blocks, and stop them out to the starboard quarter, with a good lashing, sail tackle, being fore the mast and port side of stays; hook the lower block to the bail slings, hoist the yard up high enough for rigging it. Reeve lifts and braces thus, reeve brace up through block under main top, through leading block on main stay, send it forward outside of all the rigging, up through the block on yard, send the end to main topmast head, form a close hitch above the rigging, splice the other brace to it, render the hitch back for the splice to be forepart of the mast; the two parts are seized to the main topmast stays. Reeve the lifts through sister blocks, through block at yard arm, clove hitch the end round the topmast head, same as the brace. Put topmast studding sail haulyard blocks over the goose neck, and put the boom iron on. Hoist the yard up, cast the lashing off, square the yard by the lifts and braces, keep the yard one foot above the cap; pass the parrel round the mast, and long leg round the yard lashes to a short leg on top. A lizard fitted for each lift, with a thimble in it, to hook left jigger, hook the jiggers, and haul them tight.

Topsail Tyes, (two in number.)

Reeve the end through the block at mast head, through block on yard, let the fly block be in a line with the lower cap, haul the ends tight round topmast head, hitch and seize it to its own part, stop the end down foremost shroud, hook lower block to after part of channels.

Main Topsail Yard.

Send this yard up the same way as the fore, reeve braces up through leading blocks on mizen mast, up through blocks on the yard, send the end to mizen topmast head; reeve them under the eyes of rigging, through fair leaders, or a clump block strapped round afterpart of crosstrees, and make fast after part of mizen channels lifts, reeve and secure them the same as fore.

Topsail Tye, No. 2.

Reeve and secure them same as fore.

Mizen Topsail Yard.

Send this yard up the same way as the fore; reeve braces through leading blocks at the side of the mainmast head, through blocks on the yard; splice a running eye round the same bolt, leading blocks are seized.

Topsail Lifts.

Put the eyes over the yard arm; reeve the ends through sister blocks. Turn a thimble in each and set it up on the top with a lanyard.

Topsail Tye, No. 1.

Reeve it through a sheave hole in the mast through a block on the yard, haul it tight round the mast head, hitch and seize it to its own part. Fly block bring in a line with mizen cap. If these yards were sent to mast head from the shore, they will require a guy on them to keep them from the ship's side. These yards are frequently sent up with a hawser, rove through a block at the mast head, hitched to the centre of the yard, and stopped to the quarter with a good lashing.

Fore Yard.

Put fore yard on the gunwale. The yard being on shore, or alongside the ship, the jeers will not reeve full. Reeve it through mast head block, through block on the yard, and up through mast head block. Reeve, hitch, and seize it through block on the yard. Put a

tackle on the centre to ease it off from the shore, and a small guy on each yard arm. Fore tackle may be put on to assist. Take the jeers to the capstan and walk the yard up, chocks being placed on the hammock nettings to receive the yard; place the yard on the chocks.

Main Yard.

Place it on the gunwale the same as the fore yard.

Cross Jack Yard.

Put it on the gunwale with mizen burton.

Fore Yard.

To reeve the braces. Reeve the end through main bitts, through block at cheeks of main mast, outside of all the rigging, through block on yard, and a running eye spliced round same eye, as the block is strapped in cheeks of main mast

Fore Lifts.

Shackle double blocks to cap, if strapped with chain, but if strapped with rope they will be fitted in the eye bolts of cap before sent aloft.

Reeve the lifts through after sheave of double block at the cap, through block at yard arm, up through foremost sheave of block at the cap. Splice a running eye in the end and put it over the yard arm.

Reeve the jeers full, bring it to capstan and heave the yard up, take through slack of lifts; when the yard is high enough, shackle the slip of mast head slings to slings of yard. Put tackles on lifts, and square the yard by the lifts and braces.

Reeve the truss pendants round the mast up through thimble of truss strap, and through clump block, under after part of trestletrees. There is a long Flemish eye in the end of the truss pendant, seize a 10-inch double block in it; hook the single blocks to deck after side of mast, falls 3-inches 38-ft. each.

Truss triceingline, an 8-inch single seized to the after shroud each side. Triceingline is 2½-in. 17-ft., it reeves through the block, and is seized on the pendant half way down.

Man truss falls and truss the yard, close to the mast.

Main Yard.

After brace, reeve the end through leading block on the quarter, through block at the yard arm, the end splices into an eye bolt at the quarter.

Preventer Braces.

Reeve the end up through double block at cheeks of fore mast, through block on yard, and down through the other sheave of double block, and both ends will be on deck: reeve them through sheaves in after fore belts.

Main Lifts.

Reeve the lifts the same way as the fore. Reeve the jeers full, and heave the yard up. Shackle the slings, reeve truss pendants and falls the same as the fore; triceingline for truss also as the fore. Put tackles on lifts, and square the yard by lifts and braces.

Cross Jack Yard.

Braces reeve through block at necklace of main, through block on yard, and back again to necklace. Splice a running end through one of the links close to the block.

Cross Jack Lifts.

Put the eye over the yard arm, the other end reeves through a block at the cap; or, instead of blocks at cap, lead the ends over a saddle on the cap, and set it up on deck with a lanyard. Hook double blocks of burton on each side of cap. Hook single blocks to slings, or lash them one on each quarter of the yard, near the centre, man the falls, hoist the yard up, shackle slip of mast head slings, to a band on the yard, take through slack of lifts.

Truss Pendant.

Reeve one end up through the thimble of port truss strap, pass the other end round the mast up through thimble on starboard strap, a Flemish eye made in each end. Seize a single 8-inch block in each, and sheaves in after part of trestletrees. Falls $2\frac{1}{2}$-inch 20 ft. each. Reeve them and truss yard close to the mast; square the yard by lifts and braces.

There is another way of reeving braces, "Reeve and Cut," that is, brace the yard sharp up, cut the weather braces, leaving sufficient stray rope, preventor, main, and cross jack braces would be the lee braces. Brace the yards on the other tack, cut the other braces the same way, leaving sufficient stray rope.

Fore and Main Topmast Studding-sail Booms.

Up to lower yards. Put a whip on the topsail yard, each side, make the end fast to the boom, a little outside of the centre, make the heel lashing fast to the whip to send the boom up square, hoist them up and place them in the boom irons on the yard.

Put lower studding-sail haulyard block, and topmast studding-sail tacks on the boom ends, lash the pan blocks over the topmast cap, for topmast studding-sail haulyards.

Fore and Main Top-gallant Studding-sail Booms.

Put a whip on the crosstrees, send the end down before all, and send them up the same way as topmast studding-sail boom; secure the heel with lashing round the yard, splice the tricinglines in eye bolts in inner end of boom, lash span blocks at top-gallant masthead for the haulyards.

Reeve Top-gallant and Royal Lifts and Braces.

Reeve top-gallant and royal yard ropes, bend them to the yards, stop the yards up and down the rigging ready for sending aloft.

Spanker Brail Blocks.

Put the spans over gaff, and frap them underneath vang blocks, hook them to eye bolts in the band round the gaff.

Peak and Throat Haulyards Blocks.

Iron bound with hooks. Hook them to eye bolts on the gaff, and to eye bolts at mizen mast-head, for peak haulyards; there is a chock between trestletrees for throat haulyards.

Spanker Boom.

Reeve topping lifts through clump blocks at mizen trestletrees, and splice them through eye bolts on the boom, or splice a hook in, and hook them to the eye bolts. A clump block at the boom end for an out-hauler.

Boom Sheet Blocks.

Strap them to eye bolts on the boom, and to eye bolts on the quarter.

It having been thus shown how to place all the standing rigging to rig the yards, and to send them up aloft, it only remains to state that there are a number of other blocks to be placed before the running gear is rove, such as the jib and flying-jib down haul blocks, bunt-line blocks, stabline blocks, under the top for the lead, top-gallant studding-sail tack blocks in top, and collar round foremast-head, for stay tackle pendants to hook to, span blocks round topmast-head, for fore lower studding-sail haulyards, &c., &c.

TABLE FOR STRAPPING COMMON BLOCKS WITH LASHING EYES.

Single Blocks.	Size of Strapping.	Length to Marry.	Length to Cut.
Inches.	Inches	Ft. In.	Ft In.
5	1½	1 7	2 1
6	2	1 10	2 5
7	2	2 1	2 8
8	2½	2 5	3 2
9	3	2 7	3 6
10	3½	3 0	4 0
11	3½	3 3	4 4
12	4	3 6	4 8
13	4	3 9	5 2
14	4½	4 2	5 6
15	5	4 5	6 0
16	5½	4 8	6 4

Double blocks with lashing eyes: for the length of strap, see table; as thus, the strap for a 6-in. single will do for a 5-in. double, and the strap for a 7-in. single, will do for a 6-in. double, and so on through the table.

Double Block.	Size of Strapping.	Length to Marry.	Length to Cut.
Inches.	Inches.	Feet Inches	Feet Inches
5	1½	1 11	2 5
6	2	2 2	2 8
7	2	2 6	3 2
8	2½	2 9	3 6
9	3	3 1	4 0
10	3½	3 4	4 4
11	3½	3 8	4 8
12	4	4 0	5 2
13	4	4 4	5 6
14	4½	4 8	6 0
15	5	4 11	6 4
16	5½	5 1	6 8

ADMIRAL ELLIOTT'S EYE,

In a 24-inch Cable.

Directions for making the eye, &c.

Put a good whipping on the cable, at 14 ft. from the end, then unlay the cable to the whipping.

Lash the cable to any place that is convenient.

Take the turns well out of the strands and put a tackle on them, and heave them out tight, one at a time, and beat them up with a commander, for the more they are beaten, the better the strands will lay in for the long splice.

Place one strand round the thimble and meet it with the other, to ascertain the length to marry the long splice, so that the tucks would be clear of thimble and seizing.

There will be two tucks on one side, and one on the other.

Unlay the strands and marry them together, and put a good stop round them, next to the strand, that is to lay round the eye.

As the strand is being unlaid, lay the other one in, keeping the turn well in the strand, for if the turn is allowed to go out of the strand it will swell, and will not lie in level with the other strands.

After the strand is laid in, round the eye, so that the tuck or splice will come between the two splices on the opposite side, half knot the strands and heave them well in, do not tuck them till the other strand is laid in, for fear the lay should come out.

Take off the stop from the marrying part, and take out the strand to be unlaid, put the stop on again and unlay, and lay in the other strand 2 ft. from the marrying part; half knot the strands, and heave them in.

Take the stop from the marrying part, knot the two strands, and heave them in.

Tuck all the strands once with two-thirds of each strand, leaving one-third out.

Put thimble in, and put the third strand round it, to ascertain the length for the single eye.

Put a strap through the thimble, and hook a tackle to it, and haul it well tight, to see that all parts bear an equal strain, for that is the principal point in making the eye.

If the single strand is too tight, slack the stop that is on to form the eye, and render it round the thimble.

If the single strand is slack, ease up the tackle, and take up some of the single strands, haul tight the tackle, and if the strands all bear an equal strain, put a chalk mark on where the splice will be.

The fork of the splice should be 9 inches from the thimble, that would allow for the seizing and crossing turns.

The eye in this strand is spliced the same as an eye in the end of any other rope.

Take the thimble out, and splice the eye, put the strands in once, not cut off but brought down the cable for worming under the rounding.

Whip the strands of the long splice, and cut them off within 3 inches of the rope.

Lay the cable up, and place the strands of the single eye in the wormings; put the eye on a fid, and beat it down, till it is sufficiently large enough to take the thimble after the hitching is on.

Take the eye off the fid, and hitch the two parts together with 1-inch rope, of the length of 25 fathoms; hitch the eye all round in wake of the thimble.

To secure the ends of the hitching, lay the end under the seizing, between the two parts of the rope, and after the seizing is on, pass the two crossing turns with the hitching round the seizing, the last turn comes under its own part, put a crown knot in it.

That crossing secures the riding turns of the seizing as well as the hitching.

Fid the eye out, and put the thimble in; set the cable up with a tackle.

Put a strand round the cable close to the thimble, and with a Spanish windlass, heave all parts close to the thimble.

Put a stop of spunyarn on where the first turn of seizing would come to, and take the strand off.

Seize the thimble in with 1½-inch rope of 9 fathoms in length, and number of turns, 8 and 7, and 3 crossing turns.

The seizing being finished, secure the hitching as before mentioned.

Length required for the rounding:

Size and length for the rounding, 3 in., 45 fms.; centre the rounding, and commence putting it on 6 feet from the thimble, and work both ways, and beat it on with mallets.

Finish the rounding at 12 feet from the thimble; take one strand out of the rope for the last six turns.

A TABLE OF REEF POINTS,

For 120, 90, or 84 Gun Ship.

	No. of Reefs.	Foremost Leg.		After Leg.		No. of Points.
		Ft.	In.	Ft.	In.	
Fore Course		3	6			98
Fork Topsail	1 Reef	4	6	5	6	98
Ditto	2 ditto	4	9	5	9	120
Ditto	3 ditto	5	9	6	6	140
Ditto	4 ditto	6	6	6	6	154
Main Course		3	6			112
Main Topsail	1 Reef	4	6	5	6	112
Ditto	2 ditto	4	9	5	9	130
Ditto	3 ditto	5	9	6	6	164
Ditto	4 ditto	6	6	6	6	176
Mizen Topsail	1 Reef	3	0	3	6	74
Ditto	2 ditto	3	6	4	0	80
Ditto	3 ditto	4	0	4	6	100
Ditto	4 ditto	4	6	4	6	120

A TABLE OF REEF POINTS, FOR A THIRD CLASS SHIP.

	No. of Reefs.	Foremost Leg. Ft. In.	After Leg. Ft. In.	No. of Points.
Fore Course		3 6		84
Fore Topsail	1 Reef	3 9	5 3	84
Ditto	2 ditto	4 3	5 6	96
Ditto	3 ditto	4 9	5 9	120
Ditto	4 ditto	6 0	6 0	132
Main Course		3 6		96
Main Topsail	1 Reef	3 9	5 3	96
Ditto	2 ditto	4 3	5 6	110
Ditto	3 ditto	4 9	5 9	140
Ditto	4 ditto	6 0	6 0	156
Mizen Topsail	1 Reef	3 0	3 6	60
Ditto	2 ditto	3 6	4 0	84
Ditto	3 ditto	4 0	4 6	90
Ditto	4 ditto	4 6	4 6	100
FOURTH CLASS SHIP AND 50 GUN FRIGATE.				
Fore Course		3 6		84
Fore Topsail	1 Reef	3 9	5 3	82
Ditto	2 ditto	4 3	5 6	92
Ditto	3 ditto	4 9	5 9	102
Ditto	4 ditto	5 9	5 9	124
Main Course		3 6		96
Main Topsail	1 Reef	3 9	5 3	94
Ditto	2 ditto	4 3	5 6	98
Ditto	3 ditto	4 9	5 9	132
Ditto	4 ditto	5 9	5 9	148
Mizen Topsail	1 Reef	3 0	3 6	64
Ditto	2 ditto	3 6	4 0	68
Ditto	3 ditto	4 0	4 6	76
Ditto	4 ditto	4 6	4 6	86

The length to cut the spunyarn for making reef points, is once, and one third the length of point to be made.

A TABLE OF REEF POINTS, FOR A FORTY-SIX GUN FRIGATE.

	No. of Reefs.	Foremost Leg.	After Leg.	No. of Points.
		Ft. In.	Ft. In.	
Fore Course		3 6		62
Fore Topsail	1 Reef	3 6	4 6	60
Ditto	2 ditto	3 9	4 9	64
Ditto	3 ditto	4 9	5 9	96
Ditto	4 ditto	5 9	5 9	100
Main Course		3 6		76
Main Topsail	1 Reef	3 6	4 6	76
Ditto	2 ditto	3 9	4 9	80
Ditto	3 ditto	4 9	5 9	120
Ditto	4 ditto	5 9	5 9	124
Mizen Topmast	1 Reef	3 0	3 6	52
Ditto	2 ditto	3 3	3 9	56
Ditto	3 ditto	3 9	4 6	84
Ditto	4 ditto	4 6	4 6	88
FOR A SIXTH CLASS FRIGATE.				
Fore Course		3 3		76
Fore Topsail	1 Reef	3 3	3 9	66
Ditto	2 ditto	3 6	4 6	70
Ditto	3 ditto	4 0	4 9	80
Ditto	4 ditto	4 9	4 9	100
Main Course		3 3		84
Main Topsail	1 Reef	3 3	3 9	70
Ditto	2 ditto	3 6	4 6	76
Ditto	3 ditto	4 0	4 9	100
Ditto	4 ditto	4 9	4 9	110
Mizen Topsail	1 Reef	2 9	3 3	46
Ditto	2 ditto	3 0	3 9	50
Ditto	3 ditto	3 9	4 3	68
Ditto	4 ditto	4 3	4 3	70

A TABLE OF REEF POINTS,

For a 7th class Frigate.

	No. of Reefs.	Foremost Leg. Ft.	In.	After Leg. Ft.	In.	No. of Points.
Fore Course		3	0			48
Fore Topsail	1 Reef	3	0	4	6	52
Ditto	2 ditto	3	3	3	9	56
Ditto	3 ditto	3	9	4	6	84
Ditto	4 ditto	4	6	4	6	88
Main Course		3	0			58
Main Topsail	1 Reef	3	0	3	6	64
Ditto	2 ditto	3	3	3	9	68
Ditto	3 ditto	3	9	4	6	92
Ditto	4 ditto	4	6	4	6	96
Mizen Topsail	1 Reef	2	6	3	0	40
Ditto	2 ditto	3	0	3	6	44
Ditto	3 ditto	3	6	4	0	64
Ditto	4 ditto	4	0	4	0	68

The same length of points as the fore and main would do for a 16 or 12-gun Brig, but not so many by four in the third and fourth reefs.

A TABLE FOR A 10-GUN BRIG.

Fore Course		2	9			46
Fore Topsail	1 Reef	2	9	3	3	48
Ditto	2 ditto	3	3	3	9	56
Ditto	3 ditto	3	9	4	3	76
Ditto	4 ditto	4	3	4	3	80
Main Course		2	9			48
Main Topsail	1 Reef	2	9	3	3	52
Ditto	2 ditto	3	3	3	9	60
Ditto	3 ditto	3	9	4	3	80
Ditto	4 ditto	4	3	4	3	92

A TABLE OF REEF POINTS FOR H.M. STEAM VESSEL, "TERRIBLE."

	No. of Reefs.	Foremost Leg. Ft. In.	After Leg Ft. In.	No. of Points.
Fore Course		3 6		80
Fore Topsail	1 Reef	3 9	5 3	84
Ditto	2 ditto	4 3	5 6	88
Ditto	3 ditto	5 9	5 9	128
Main Course		3 6		80
Main Topsail	1 Reef	3 9	5 3	84
Ditto	2 ditto	4 3	5 6	88
Ditto	3 ditto	5 9	5 9	120
Points for H.M. Steam Vessel, "Scourge."				
Fore Course		2 9		58
Fore Topsail	1 Reef	3 6	4 0	60
Ditto	2 ditto	4 0	4 6	68
Ditto	3 ditto	4 6	4 6	94
Points for H.M. Steamers, "Rifleman" & "Sharpshooter."				
Fore Course		2 6		58
Fore Topsail	1 Reef	3 6	3 9	60
Ditto	2 ditto	3 9	4 0	64
Ditto	3 ditto	4 3	4 3	72

A TABLE FOR THE LENGTH OF EYES FOR STANDING RIGGING.

Half the round of the mast head, and one-third of one square, will be the length of the eye; that would be from the inside part of the eye to the first turn of the seizing. It will do also for the lower and top mast rigging, and backstays.

Round of Mast.		Length for the eye		Round of Mast.		Length for the eye	
Feet.	Inch.	Feet.	Inch.	Feet.	Inch.	Feet.	Inch.
2	1	1	3	4	11	2	10½
2	2	1	3	5	0	2	11
2	3	1	3½	5	1	2	11½
2	4	1	4	5	2	3	0
2	5	1	5	5	3	3	1
2	6	1	5½	5	4	3	1½
2	7	1	6	5	5	3	2
2	8	1	6½	5	6	3	2½
2	9	1	7	5	7	3	3
2	10	1	7½	5	8	3	3½
2	11	1	8	5	9	3	4
3	0	1	9	5	10	3	4½
3	1	1	9½	5	11	3	5½
3	2	1	10	6	0	3	6
3	3	1	10½	6	1	3	6½
3	4	1	11	6	2	3	7
3	5	2	0	6	3	3	7½
3	6	2	0½	6	4	3	8
3	7	2	1	6	5	3	9
3	8	2	2	6	6	3	9½
3	9	2	2½	6	7	3	10
3	10	2	3	6	8	3	10½
3	11	2	3½	6	9	3	11
4	0	2	4	6	10	3	11½
4	1	2	4½	6	11	4	0
4	2	2	5	7	0	4	1
4	3	2	5½	7	1	4	1½
4	4	2	6	7	2	4	2
4	5	2	6½	7	3	4	2½
4	6	2	7	7	4	4	3
4	7	2	8	7	5	4	3½
4	8	2	8½	7	6	4	4
4	9	2	9	7	7	4	5
4	10	2	10	7	8	4	5½

TABLE FOR THE EYES, *(continued)*.

Round of Mast.		Length for the eye		Round of Mast.		Length for the eye	
Feet.	Inch.	Feet.	Inch.	Feet.	Inch.	Feet.	Inch.
7	9	4	6	9	5	5	6
7	10	4	6½	9	6	5	6½
7	11	4	7	9	7	5	7
8	0	4	8	9	8	5	8
8	1	4	8½	9	9	5	8½
8	2	4	9	9	10	5	9½
8	3	4	10	9	11	5	10
8	4	4	10½	10	0	5	10
8	5	4	11	10	1	5	10½
8	6	4	11½	10	2	5	11
8	7	5	0	10	3	5	11½
8	8	5	1	10	4	6	0½
8	9	5	1½	10	5	6	1
8	10	5	2	10	6	6	1½
8	11	5	2½	10	7	6	2
9	0	5	3	10	8	6	2½
9	1	5	3½	10	9	6	3
9	2	5	4	10	10	6	3½
9	3	5	4½	10	11	6	4
9	4	5	5½	11	0	6	4½

H.M. BRIG FLYING FISH, 12 GUNS.

Standing Rigging, Fore Rigging, Fore Mast.

	Fthm.	Ft	Inch.
Length from deck to lower side of trestletrees - - - -	6	5	9
Channels above the deck - - -	0	3	0
	6	2	9
Depth of trestletrees and bolsters -	0	1	5
8-inch Rope.			
Breadth of beam - - - -	0	3	2
Place the warping pins at the distance of	7	1	4
Multiply by two - - - -			2
Length of No. 1, pair of shrouds - -	14	2	8
Ditto 2, ditto - -	14	4	0
Ditto 3, ditto - -	14	5	4
Ditto 4, ditto - -	15	0	8
Ditto 5, ditto - }	15	2	0
For half the two eyes and splicing }	1	3	0
	75	5	8

FORE TOP MAST SHROUDS.

5-Inch Rope.

	Fthm.	Ft.	Inch.
Length from hounds to heel - -	5	4	2
Depth of crosstrees - - -	0	0	9
Place the warping pins at the distance of	5	4	11
Multiply by two for first pair - -			2
Length of No. 1, pair of shrouds -	11	3	10
Ditto 2, ditto -	11	4	9
Ditto 3, ditto }	11	5	8
For half the two eyes and splicing }	0	5	0
	36	1	3

TOP MAST BACK STAYS.

6-Inch Rope.

From deck to lower side trestletrees -	6	5	9
Fore channels above deck - -	0	3	0
Topmast, from hounds to heel - -	6	2	9
	5	4	2
Depth of crosstrees and bolster - -	0	1	0
	12	1	11
Multiply by two - - - -			2
Length of No. 1 pair of backstays -	24	3	10
Ditto 2 ditto - -	24	4	10
	49	2	8

12-GUN BRIGS.

Fore Top Gallant Shrouds, 3½-Inch Rope.

Top Mast.

From hounds to heel - - -	5	4	3

Top Gallant Mast.

From hounds to heel - - -	3	1	3
Place the warping pins distance apart -	8	5	5
Multiply by two for the first pair -			2
Length of No. 1 pair of shrouds -	17	4	10
Ditto 2 ditto - - -	17	5	5
	35	4	10

TOP GALLANT BACKSTAYS.

	Fm.	Ft.	Inch
Fore Mast.			
From the deck to lower side of trestletrees	6	5	9
Channels above the deck - - -	0	3	0
	6	2	9
Topmast, from hounds to heel - -	5	4	2
Top-gallant mast, from hounds to heel -	3	1	3
	15	2	2
Multiply by two - - - -			2
Length of No. 1 pair of backstays -	30	4	4
Ditto 2 ditto - -	30	4	11
	61	3	3

ROYAL BACKSTAYS.

7-Inch Rope.

Fore Mast.			
From deck to lower side of trestletrees -	6	5	9
Channels above the deck - - -	0	3	0
	6	2	9
Topmast, from hounds to heel - -	5	4	2
Top-gallant mast, from hounds to heel -	3	1	3
Royal.			
Length of royal mast - - -	2	0	6
Place the warping pins at - - -	17	2	8
Multiply by two - - - -			2
Length of No. 1 pair of backstays -	34	5	4
Ditto 2 ditto - -	34	5	8
	69	5	0

A 12-GUN BRIG'S MAIN SHROUDS.

Main Mast.			
From deck to lower side of trestletrees -	7	4	3
Channels above the deck - - -	0	3	0
	7	1	3
Depth of trestletrees and bolster - -	0	1	5
Half the breadth of beam - -	0	3	0
	7	5	8

	Fthm.	Ft.	Inch
Place the warping pins at - -	7	5	8
Multiply by two for the first pair - -			2
Length of No. 1 pair of shrouds -	15	5	4
Ditto 2 ditto - -	16	0	8
Ditto 3 ditto - -	16	2	0
Ditto 4 ditto - -	16	3	4
Ditto 5 ditto -	16	4	8
Length for half the two eyes and splicing	1	3	6
	83	1	6

Top Mast Shrouds, 5½-Inch Rope.

From hound to heel - - -	6	0	9
Depth of crosstrees - - -	0	0	9
Place the warping pins at - -	6	1	6
Multiply by two for the first pair -			2
Length of No. 1 pair of shrouds -	12	3	0
Ditto 2 ditto - -	12	3	11
Ditto 3 ditto - -	12	4	10
For half the two eyes and splicing -	0	5	0
	38	4	9

Top Mast Backstays, 6-Inch Rope.

From deck to lower side of Trestletrees -	7	4	3
Channels above deck - - -	0	3	0
	7	1	3
Length from hounds to heel - -	6	0	9
Depth of crosstrees and bolster - -	0	1	0
Place the warping pins at - -	13	3	0
Multiply by two for the first pair -			2
Length of No 1 pair of backstays -	27	0	0
Ditto 2 ditto - - -	27	1	0
	54	1	0

A 12 GUN BRIG'S MAIN TOP GALLANT SHROUD.

3½-Inch Rope.

	Ftam.	Ft.	Inch
Topmast, from hounds to heel - -	6	0	9
Top Gallant Mast.			
From hounds to heel - - - -	3	2	9
Place the warping pins at - - -	9	3	6
Multiply by two for the first pair - -			2
Length of No. 1 pair of shrouds - -	19	1	0
Ditto 2 ditto - - -	16	1	7
	38	2	7

MAIN TOP GALLANT BACKSTAYS.

3½-Inch Rope. Main Mast,

From the deck to lower side of trestletrees	7	4	3
Channels above the deck - - -	0	3	0
	7	1	3
Top Mast.			
From Hounds to heel - - -	6	0	9
Top Gallant Mast.			
From hounds to heel - - -	3	2	9
Place the warping pins at - -	16	4	9
Multiply by two for the first pair - -			2
Length of No. 1 pair of backstays -	33	3	6
Ditto 2 ditto - - -	33	4	1
	67	1	7

MAIN ROYAL BACKSTAYS.

2-Inch Rope. Main Mast.

Length from deck to lower side trestletrees	7	4	3
Channels above the deck - - -	0	3	0
	7	1	3

Top Mast.

	Fthm.	Ft.	Inch.
From hounds to heel - - -	6	0	9

Top Gallant Mast.

From hounds to heel - - - -	3	2	9

Royal.

Length of royal mast - - -	2	1	6
Place the warping pins at - - -	19	0	3
Multiply by two for the first pair -			2
Length of No. 1 pair of backstays -	38	0	6
Ditto 2 ditto -	38	0	10
	76	1	4

CHAIN CABLES.			CHAIN RIGGING.		
Diameter Chain.		Circumference, Hemp.	Diamtr. Chain.		Circum. Hemp.
Inches.		In. In and In.	Inches.		In. In.
½	Equal to	4 4½ „ 5	¼	eql. to	2
⅝	„	5½ „ 6	5-16ths.	„	2½ & 2¾
11-16ths.	„	6½ „ 7	3-8 „	„	3 „ 3¼
¾	„	7½ „ 8	7-16 „	„	3 „ 3¾
⅞	„	8½ 9 „ 9½	½	„	4
1	„	10 „ 10½	9-16ths.	„	4½
1	„	11 11½ „ 12	5-8 „	„	5 „ 5½
1⅛	„	12½ 13 „ 13½	11-16 „	„	6 „ 6½
1¼	„	14 „ 14½	¾	„	7 „ 7½
1⅜	„	15 15½ „ 16	13-16ths.	„	8
1⅝	„	16½ 17 „ 17½	7-8 „	„	8 „ 9
1¾	„	18 18½ „ 19	15-16 „	„	9½
1⅞	„	19½ 20 „ 20½	1	„	10
2	„	21 21½ „ 22			
2⅛	„	22½ 23 „ 23½			
2¼	„	24 24½ „ 25			

DIRECTIONS AND DIMENSIONS FOR CUTTING OUT AND FITTING WIRE RIGGING.

Say the Edinburgh Class of Ships.

If the mast is stepped, measure with a line from the upper part of Bolster to two feet below Channel, and allow half the round of Mast-head for the Eye, then multiply it by two, that will give the length of No. 1 Shrouds. For Wire Rigging you need to measure for every Pair of Shrouds, if the Dead Eyes in Channels deviate much in the distance from each other, as is the case in the Fore Channels of Edinburgh, in wake of the opening of the Gunwale for the long Gun, you will see in the table the distance from No. 5 Dead Eye to No. 6, is 11 ft. 6 in., whereas the other dead eye does not exceed 2 ft. 9 in.

If the Mast is not in the Ship.

Take the length of Mast from the Upper Deck to upper part of Bolster, then ascertain what the breadth of Beam will give for taking the Shroud out to Channels (refer to the drawings in page 31) then allow half the round of Mast-head and two feet below Channels, multiply it by two, that will give you the length of No. 1 Pair of Shrouds. Circumference of the Fore and Main Shrouds is 4¼ in.; Dead Eyes, 16 in. in diameter; Mizen Shrouds, 3¼ in.; Dead Eyes, 12 in. in diameter. Measuring for the Mizen Rigging only, allow one foot below Channels, as the Dead Eyes are one foot smaller in circumference than the Fore or Main; also, all smaller Steamers in which the Dead Eyes do not exceed 12 in. in diameter, one foot below Channels is sufficient, in addition to the angle.

CUTTING CUT WIRE RIGGING.

Wire Rigging is not warped round Pins or Sampson Posts same as Hemp Rigging.

Wire is cut on the straight, viz.: make one end fast and put a tackle on the other part above where you want to cut: when the wire is straight along the deck or floor, mark the wire where it is to be cut, put a wippen on each side of the mark, then lay the axe under the wire at the mark, and beat it down with a commander.

FITTING WIRE RIGGING.

All Wire requires more end for Splicing than Hemp.

In Splicing put the Strands in as follows:—once whole Strand, once two-thirds of a Strand, and once one-third of a Strand, that will make a good taper, then set it up and well stretch the splice, break the yarns off close to the rope by working a yarn backward and forward two or three times quick, and parcel and serve over the splice with spunyarn.

Stays are served the same as Hemp Rope, and fitted the same, except the Lashing Eyes, and they are Spliced Eyes ; but in cutting Stays out, you must allow the half Collar and sufficient end for splicing, for there is no stretch to be got out of wire rigging; the Shrouds are parcelled and served all over from end to end; if the Shrouds were not served, the Ratlines would slip down the Shrouds. If you turn the Dead Eyes in the Shrouds temporarily for setting up, stop the Shroud round the Dead Eye and rack the end up to the standing part; for if you turn it in Cutter Stay fashion, and have to alter it, it is not very easy to get the nip out of the wire.

QUESTIONS AND ANSWERS.

Dimensions for cutting Lower Rigging Hemp Measure from the upper part of Bolster close to Mast, to the lower edge of Channels abreast of the Foremast Dead Eye; if fitted on Board allow for half the Eye, what the Rope will stretch will give the other half.

What are the Dimensions for the Service? From the centre of the Eye of the first pair, would be one-third the length of Mast, from Tressletrees to Deck.

What are the dimensions for lower Pendants? Long leg from seizen of the Eye to the Thimble, would be one-third the length of Mast from upper part of Bolster to Deck. Short leg one-third less than long leg.

What is the length of Top Burton Pendants? From the fork of the Eye to the Thimble is one-fourth the length of Topmast from Hounds to Heel.

What are the Dimensions to cut Topmast Shrouds? The length of Topmast from Hounds to Heel, if fitted on board, allow for half the Eye.

What are the Dimensions for the Service? From the centre of the Eye would be one-fifth the length of Topmast from Hounds to Heel.

What are the Dimensions for cutting Topmast Back-stays? Length of lower mast from Deck to Tressle-trees, and the length of Topmast from upper part of Bolster to Heel; if fitted on board of the Ship allow for half the Eye, what the Rope will stretch will allow the Back-stays to go out to Channels. The Service is one foot more than the Shrouds.

What are the dimensions to cut Top Gallant Shrouds? Length of Topmast from Hounds to Heel, and Top Gallant Mast from Hounds to Heel.

Dimensions to cut Top Gallant Backstays? Length of lower Mast from deck to lower side of Tressletrees and Topmast from Hounds to Heel, and Top Gallant Mast from Hounds to Heel.

Dimensions to cut Royal Back-stays? Length of Lower Mast from deck to Tressletrees, and topmast from Hounds to Heel, and from the Hounds of Royal Mast to the Heel of the Top Gallant Mast.

Length of Rope required for Jackstay of Lower Yards? Once the extreme length of the Yard.

Length of Rope required for Foot Ropes for ditto? Once the extreme length of the Yard, and one-twelfth.

Dimensions for Topsail Yard Parrel when fitted? Long leg from eye to eye would be twice the round of the Yard, and two-thirds the round of Mast. Short leg from eye to eye, two thirds the round of Topmast.

Length of Rope required for Topsail Yard Jackstays? Four feet 6 inches less than the extreme length of the Yard.

Length of Rope required for Topsail Yard Foot Ropes? Once the extreme length of Yard and one-fourth.

Length of Rope for Yard Tackle Pendant? One-fourth the length of Yard for each Pendant.

When you lash the head of the Sheers, which would be the upper or Foremast leg, if the Mast is to be hoisted in the Starboard side? The Port Sheer leg should be the upper one when placed on Taffrail, that will allow the Starboard leg, the circumference of the Spar, to be further aft than the Port one, and would give room for the Mast to enter through Sheer legs, and the purchase fall will lead clearer.

Which Mast would you step first? The Mizen Mast, then Main Mast, then Fore Mast, then drop Sheer for Bowsprit.

What are the dimensions for length of Bobstay Collars? When the two eyes are spliced and served from eye to eye on the straight before the heart is seized in, take once the round of Bowsprit, once the round of

the heart, and two-thirds the round of rope, and when the heart is seized in, the length from the heart to the back of the eye, would be half the round of Bowsprit, and what the Collar takes up in going round the Bowsprit would give sufficient drift between the eyes for lashing.

N.B.—For all Large Ships where the Rope is more than 8 in., allow for half the seizing which would be 5 ft. on the straight.

What are the dimensions for Bowsprit Shroud Collar? Length from eye to eye on the straight would be once the round of Bowsprit, round of Heart or Thimble, and two-thirds the round of rope the Heart is seized in at the thirds; what this Collar takes up going round the Bowsprit, would give sufficient drift for lashing.

What are the dimensions for length of Fore Stay Collars the Bail Sling Collars? Length when fitted from the Heart to the back of the Eye would be once the round of Bowsprit, and what it takes up going round the Bowsprit would give sufficient drift for lashing.

What are the dimensions for clothing the Bowsprit? The inner Bobstay Collar would be lashed on the Bowsprit two-thirds from the Knight-head to the outer edge of the Cap; outside and close to it would be the inner Bowsprit Shroud Collars; outside and close to the Bowsprit Shroud Collars would be the Port Fore Stay Collar, and three feet outside of the inner Collar would be the middle Bobstay Collar, and outer Bowsprit Shroud Collar, and outer Fore Stay Collar, and three feet outside of the middle Collar would be the outer Bobstay Collar, for Line of Battle Ships. Smaller vessels the distance Bobstay Collars would be from each other, is 2 ft. 9 in., 2 ft. 6 in., 2 ft. 3 in., and 2 ft.

What are the dimensions for Spritsail Guys when fitted? The length of the fore Guys from the fork of

the Eye that goes over the Jib-boom end to the fork of the Eye that goes over the Spritsail Gaff, would be one foot less than the Jib-boom is, from hounds to heel.

What is the length of rope required for Jib-boom Foot-ropes? Once and a half the length of Jib-boom from hounds to heel.

What are the dimensions for Truss Straps for lower Yards when fitted? Long leg from Thimble to the back of the eye, would be two-thirds the round of the Yard; and short leg, one-third, giving the long leg the advantage of four or five inches.

What are the dimensions for Yard-arm Straps for Brace Blocks? Once the round of Yard-arm, once the round of Thimble, and once and a half the round of rope, that would be the marrying mark, then allow sufficient end to splice it.

What are the dimensions for Lift Block Straps? Once the round of the Yard, once the round of Block, and once and a half the round of rope, is the length to marry the Strap, then allow sufficient end to splice it.

What are the dimensions for length of lower Stay Collars when fitted? Once the round of Mast-head and four-fifths.

A TABLE FOR THE SAME.

Length of Collar.			Round of Masthead.		
Fthm.	Ft.	In.	Fthm.	Ft.	In.
3	0	3	1	4	0
2	5	2½	1	3	6
2	4	3	1	3	0
2	3	6	1	2	7
2	2	2	1	1	10
2	1	8	1	1	7
2	0	7	1	1	0
1	5	8	1	0	6
1	4	8		5	11
1	3	11		5	6
1	3	0		5	0
1	2	5		4	8

What are the dimensions for length of Topmast Stay Collar? Once the round of Topmast head and four-fifths the round.

A TABLE FOR THE SAME.

Length of Collar.			Round of Mast-head.		
Fthm.	Ft.	In.	Fthm.	Ft.	In.
1	4	8		5	11
1	3	11		5	6
1	3	1		5	0
1	2	7		4	9
1	2	1		4	6
1	1	2		4	0
1	0	4		3	6
1	0	0		3	4
	5	3		3	0
	5	0		2	9
	4	6		2	6
	3	9		2	1

A SCALE OF THE COMPARATIVE STRENGTH OF WIRE ROPE, HEMP ROPE, AND CHAIN.

In. in Circumfrnce. equal to		In. in Circumfrnce. equal to		In. in Dimter.
$1\frac{1}{2}$	„	3	„	5-16ths
$1\frac{3}{4}$	„	4	„	3-8ths.
2	„	5	„	2-4ths
$2\frac{1}{4}$	„	$5\frac{1}{2}$	„	9-16ths
$2\frac{1}{2}$	„	6	„	5-8ths
3	„	7	„	3-4ths
$3\frac{1}{2}$	„	8	„	7-8ths
4	„	9	„	1
$4\frac{1}{2}$	„	10	„	1 1-8th
5	„	11	„	1 1-4th

H. M. S. EDINBURGH CLASS.

A Scale for Cutting Wire Shrouds Fore Rigging, agreeable to the range of Dead Eyes in Channels.

	Ft.	In.
Length of Mast from Deck to lower side of Tresletrees	51	0
Depth of Tresletrees and Bolster	2	0
Breadth of Beam from the after centre part of Mast hole to the outer edge of Channels is 21 ft. 3 in., that gives for carrying the Shroud out	4	0
For wire allow 2 feet below Channels	2	0
Allow for half the Eye for wire rigging, which would be	4	6
From the opposite side of Mast above the Bolster, to 2 feet below Channels	63	6
Multiply it by		2
Extreme length of No. 1 pair of Shrouds	127	0
" " 2 " "	127	6
" " 3 " "	128	6
" " 4 " "	129	0
" " 5 " "	132	7
" " 6 " "	133	1
" " 7 " "	139	2
" " 8 " "	139	8
Length. of wire required for Fore Shrouds $4\frac{3}{4}$ in. wire, 16 in. Dead Eyes	1055	6

A TABLE FOR TURNING DEAD EYES IN FORE SHROUDS WIRE, SHOWING THE NO , AND ALSO THE NO. OF DEAD EYES IN CHANNELS AND THE DISTANCE OF ONE DEAD EYE FROM THE OTHER.

	No. 1.		No. 2.		No. 3.		No. 4.		No. 5.		No. 6.		No. 7.		No. 8.	
	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.
Distance of one Dead Eye from the other -			2	8	2	5	2	4	2	8	11	6	2	9	2	8
From upper part of Bolster to Channels - -	57	0½	57	0½	57	2	57	6	57	10	60	9	61	9	62	9
Distance Seizing of Eye from Mast - -	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
From Seizing of Eye to Channels - -	56	0½	56	0½	56	2	56	6	56	10	59	9	60	9	61	9
Standing part of Shroud takes up going half round the Dead Eye - - - - - -	0	8	0	8	0	8	0	8	0	8	0	8	0	8	0	8
	56	8½	56	8½	56	10	57	2	57	6	60	5	61	5	62	5
Drift for setting Shrouds up from Channels -	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0
	52	8½	52	8½	52	10	53	2	53	6	56	5	57	5	58	5
From lower part of Dead Eye to Nip - -	2	5	2	5	2	5	2	5	2	5	2	5	2	5	2	5
What one Shroud rises above each other - -					0	4	0	4	0	8	0	8	1	0	1	0
Length of Starboard Shroud from Seizing of the Eye to the Nip - - - - - -	55	1½	55	1½	55	7	55	11	56	7	59	6	60	10	61	10
What the Port Shrouds rises above the starboard	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2
Length of Port Shrouds from Seizing of the Eye to the Nip - - - - - -	55	3½	55	3½	55	9	56	1	56	9	59	8	61	0	62	0

N.B.—There would be four feet end left from the Nip, that would be stepped round the Dead Eye, allow 4 ft. 6 in. on each Leg for the Eye. which would be 9 ft. on each pair, and you will find that will correspond with the Cut that is shown on the other side.

H. M. S. EDINBURGH CLASS.

A Scale for cutting Wire Shrouds Main Rigging agreeable to the range of Dead Eyes in Channels.

	ft.	in.
Length of Mast from deck to lower side of Tressletrees - - - - - -	55	6
Depth of Tressletrees and Bolster - -	2	3
Breadth of Beam from the after centre part of Mast hole to the outer edge of Channels, 21 ft. 6 in., that gives for taking the Shroud out - - - - - - - - -	4	0
For Wire allow two feet below Channels on each Leg - - - - - - -	2	0
And half the Eye on each Leg which would be	4	10
From the opposite side of Mast above the Bolster to 2 ft. below Channels - .	68	7
Multiply it by - - - - - -		2
Extreme length of No. 1 pair of Shrouds -	137	2
„ „ 2 „ „	137	6
„ „ 3 „ „	138	6
„ „ 4 „ „	138	10
„ „ 5 „ „	140	2
„ „ 6 „ „	140	6
„ „ 7 „ „	142	9
„ „ 8 „ „	143	1
16 in. Dead Eyes—4¾ in. Wire Rope	1118	6

MAIN RIGGING.

Table for Turning Dead Eyes in Wire Rigging, Cutter Stay Fashion, before it is put over Mast Head; showing the number of Shrouds, and the distance one Dead Eye is from the other in Channels.

	No. 1.		No. 2.		No. 3.		No. 4.		No. 5.		No. 6.		No. 7.		No. 8.	
	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft.	in.
Distance between Dead Eyes in Channels -			2	6	2	6	2	4	2	4	2	8	2	4	2	9
From the upper part of Bolster to Channels -	61	9	61	9	61	11	62	1	62	4	62	7	63	1	63	10
Distance the Seizing of Eye would be from Mast	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
From Seizing of the Eye to Channels - -	60	9	60	9	60	11	61	1	61	4	61	7	62	1	62	10
Standing part took up, going half round Dead Eye	0	8	0	8	0	8	0	8	0	8	0	8	0	8	0	8
	61	5	61	5	61	7	61	9	62	0	62	3	62	9	63	6
Drift for setting up 4 ft. from Channels - -	4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0
From Seizing of Eye to lower part of Dead Eyes in Shroud - - - - - -	57	5	57	5	57	7	57	9	58	0	58	3	58	9	59	6
From lower part of Dead Eye to Nip - -	2	5	2	5	2	5	2	5	2	5	2	5	2	5	2	5
What one Shroud rises above the other - -	0	0	0	0	0	4	0	4	0	8	0	8	1	0	1	0
Length of Starboard Shrouds from seizing of the Eye to the Nip	59	10	59	10	60	4	60	6	61	1	61	4	62	2	62	11
What the Port Shroud rises above Starboard -	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0	2
Length of Port Shrouds from Seizing to Nip -	60	0	60	0	60	6	60	8	61	3	61	6	62	4	63	1

There would be 4 ft. end left from the Nip, that would be stepped round the Dead Eye, allow 4 ft. 6 in. on each Leg for the Eye, which would be 9 ft. on each pair, and you will find it will correspond with the Cut on the other side.

H. M. SHIP EDINBURGH CLASS.

A Scale for cutting Wire Shrouds Mizen Rigging, agreeable to Range of Dead Eyes in Channels.

Length of Mast from Deck to Lower side of Tressletrees -	46ft.	0in.
Depth of Tressletrees and Bolster - - - -	2	0
Breadth of Beam from the after centre part of Mast Hole to the outer edge of Channels abreast of the Foremast Dead Eye 19ft 6in., that gave for taking the Shroud out to Channels	3	4
Allow one foot below Channels - - - -	1	0
Allow 3ft. 9in. for half the Eye - - - -	3	9
From the oppste. side of Mast abve. the Blstr, to 1ft. 6in. below Chnls.	56	1
Multiply it by - - - - -		2
Extreme length of No. 1 pair of Shrouds - -	112	2
" 2 " - -	112	5
" 3 " - -	112	8
" 4 " - -	113	0
" 5 " starboard, a single leg, allow the whole of the eye and 2 ft. for splicing - -	61	0
" 5 " port - -	61	6½
Size of Wire, ¾in. 12in. Dead Eyes - - -	572	4½

Table for Turning Dead Eyes in Wire Shrouds, Mizen Cutter Stay Fashion, before it is put over Masthead; shewing the number of Shrouds, and distance between Dead Eyes in Channels.

	No. 1.		No. 2.		No. 3.		No. 5		No. 5	
	ft.	in.	ft.	in.	ft.	in.	ft.	in.	ft	in.
Distance between Dead Eyes in Channels		2	0	2	0	2	3		2	6
From upper part of Bolster to Channels	51	4	51	0	51	4	51	4	51	6
Distance the seizing of Eye would be from Mast - - - - -		8		8		8		8		8
	50	8	50	8	50	8	57	8	50	8
Allow 3 ft. drift from Channels for setting Shroud up - - -	3		3		3		3		8	
	47	8	47	8	47	8	47	8	47	10
Standing part of Shroud taken up going half round Dead Eye - -		6		6		6		6		6
From lower part of Dead Eye to Nip -	1	10	1	10	1	10	1	10	4	10
What one Shroud rises above each other										
Length of Starboard Shrouds from seizing to Nip - - -	50	0	50	0	50	3	50	3	50	3
What the Port Shroud rises above the Starboard - - -		1½		1½	1	1½		1½		1½
Length of Port Shrouds from Seizing to Nip	50	1½	50	1½	50	4½	50	4½	50	9½
Twelve in. Dead Eyes, size of Wire 3½in.